

# Alaska Mapping Business Plan:

Integrating Mapping,  
Risk Assessment,  
and Resilience Planning



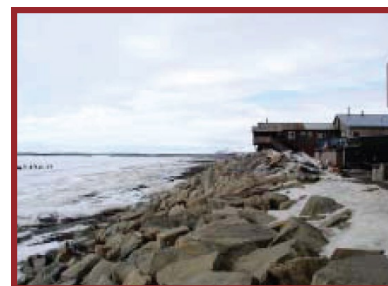
Galena 2013



Matanuska-Susitna Borough 2012



Nenana 2008



Nome 2007



Eagle 2013



Emmonak 2005

## September 2017



State of Alaska  
Department of Commerce, Community,  
and Economic Development  
Division of Community and Regional Affairs



United States  
Department of Homeland Security  
Federal Emergency Management Agency  
Region X



Eagle 2009



Shishmaref 2001



Aniak 2002



Eagle 2000



Valdez 2006



Shishmaref 2001

Alaska Department of Commerce, Community, and Economic Development; Division of Community and Regional Affairs

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## EXECUTIVE SUMMARY

Over the last 20 years, the number of state- and federally-declared disasters in Alaska has increased dramatically. The majority of these disasters are caused by flooding associated with severe storms. Each year, these events put Alaskan communities at risk of loss of life and property. Recent studies indicate that the frequency and intensity of these storms is likely to increase, especially in the coastal regions of Alaska.

FEMA's flood hazard maps are one of the essential tools for flood hazard mitigation and implementation of the National Flood Insurance Program (NFIP) in the United States. These maps are used an estimated 20 million times annually in the private and public sectors. The State of Alaska and its local governments rely on FEMA flood hazard maps to regulate floodplain development and otherwise mitigate for flood losses. Flood hazard maps produced by FEMA currently serve 42 Alaska borough and city governments.

FEMA's efforts to provide flood hazard maps to inform the nation's understanding about flood risk have evolved significantly over the past nearly two decades. From 2002-2008, FEMA's Map Modernization (Map Mod) effort transformed most of the nation's flood hazard mapping inventory to 21st century digital technology and restored confidence in the reliability of floodplain boundaries, while making some updates to underlying engineering data. In order to leverage the successes of Map Mod and further enhance the use, value, and accuracy of flood hazard mapping and related data, FEMA developed the Risk Mapping, Assessment and Planning (Risk MAP) Program in 2008-2009.

Risk MAP represents a philosophical and tactical shift in how FEMA delivers information necessary for flood and other hazard reduction. The focus has shifted from digitizing maps (Map Mod) to evaluating flood hazard data needs, meeting flood hazard data needs, expanding data availability and improving data accessibility. While earlier mapping efforts took one-to-two years with little interaction with the community under study, the Risk MAP process typically takes four-to-six years, with extensive technical assistance provided to the community, combined with a more holistic approach that focuses not only on the flood maps, but on all hazards impacting the community, and how the new data, risk assessments and tools can be integrated into community plans and ongoing efforts to increase community resilience.

The goal of the Risk MAP Program is to increase local resilience by providing communities with hazard information and tools they can use to strengthen local ability to make informed decisions about reducing risk. A cornerstone of Risk MAP is the collaborative partnerships developed to increase community resilience to natural hazard risks.

DCRA and FEMA have collaborated for nearly 30 years to reduce loss of life and property through strategies and programs that reduce natural hazard risk in Alaska. As the State of Alaska's designated



State Coordinating Agency for the NFIP, DCRA has actively participated in studying the status of flood hazard mapping and making recommendations for updating or creating new maps. Over the years, significant progress has been made through FEMA's mapping efforts and DCRA's Community Mapping Program. However, the data gathering and the prioritization scheme that formed the basis of DCRA's earlier mapping strategies had not undergone a comprehensive update to reflect mapping progress during recent years. Consequently, mapping priorities identified in earlier plans did not reflect the current availability of mapping data, local socioeconomic conditions, natural hazard and climate change data as collected by various state and federal agencies.

In 2011, DCRA funded a new effort to rank and prioritize Alaska's watersheds based on a range of criteria specific to Alaska. To accomplish this, state agencies and local communities were coordinated with to obtain information and data necessary for the prioritization of mapping needs. A consulting firm, URS, Inc. (now AECOM), was hired to carry out this process. The process of data acquisition, analysis, and prioritization of future study needs resulted in a new tool, the *Alaska Prioritization and Future Studies Sequencing Decision Support System*, which has informed the identification of Alaska's mapping priorities over the past 6 years. This tool is described in detail in Chapter 7. During this time, sixteen NFIP-participating local governments have been the recipients of Risk MAP studies. Each of these communities has received or is in the process of receiving non-regulatory risk assessment tools and products, with 10 communities receiving new or updated regulatory Flood Insurance Studies and Flood Insurance Rate Maps.

While the regulatory products of Risk MAP - the Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) - are a critical means to identify flood risk and provide local eligibility to receive federally-backed flood insurance, flooding is not the only natural hazard effecting Alaska's communities, nor is participation in the NFIP a good fit for all Alaskan communities. Alaska's strategy for Risk MAP addresses both issues.

For example, several communities engaged in Risk MAP Studies have identified landslide, avalanche and erosion as significant threats. Risk MAP Cooperating Technical Partner Grant Program funding has been provided to the City and Borough of Sitka for a landslide study and to the City of Emmonak for a channel migration study.

Alaska's Risk MAP Strategy also focuses on bringing the tools and products of Risk MAP to communities that don't participate in the NFIP. Unlike many other states where local governments with flood hazards have long been identified and mapped, Alaska has 120 incorporated municipal governments (cities and boroughs) that have no Flood Insurance Rate Maps. No ordinances exist to regulate floodplain development in these cities and boroughs, nor are they eligible to receive federal flood insurance. Many of these communities are highly flood-prone, resulting in costly State and federal disasters without the benefit of federal flood insurance.



Over the past two decades, awareness has increased of the number of communities, particularly in western and northern Alaska, whose viability is being impacted not only by flooding, but also erosion, and permafrost degradation. A key impediment to these communities making progress in addressing these impacts is the lack of scientific study and data needed to more thoroughly understand the near-, mid- and long-term consequences of these impacts. Without quantifiable data, it is very difficult for these communities, and the agencies assisting them, to make informed decisions and develop strategies to adapt and respond to hazard threats.

The 2017 Alaska Mapping Business Plan provides a high-level approach to how the Alaska Risk MAP Program can help imminently-threatened communities who don't participate in the NFIP respond and adapt to flood and other hazard threats, while continuing to assist NFIP-communities in reaching their resilience goals.

The Mapping Business Plan provides an overview of Alaska's NFIP-participating local governments, their local and FEMA characteristics, and the status of Risk MAP studies within these communities. The plan discusses the new Risk MAP initiative to assist imminently-threatened Alaska Native Villages. The State of Alaska's Risk MAP Strategy is discussed, including the prioritization tool used to rank NFIP-participating communities for new Risk MAP Studies. Finally, the State's Risk MAP study recommendations and goals for the coming year are provided.

**Figure 1: Yukon River Ice Jam at Galena, Alaska**



*Photo: Ed Plumb, National Weather Service*





**Figure 2: Tsunami and Coastal Flood-Elevated Home, Lowell Point, Kenai Peninsula Borough**



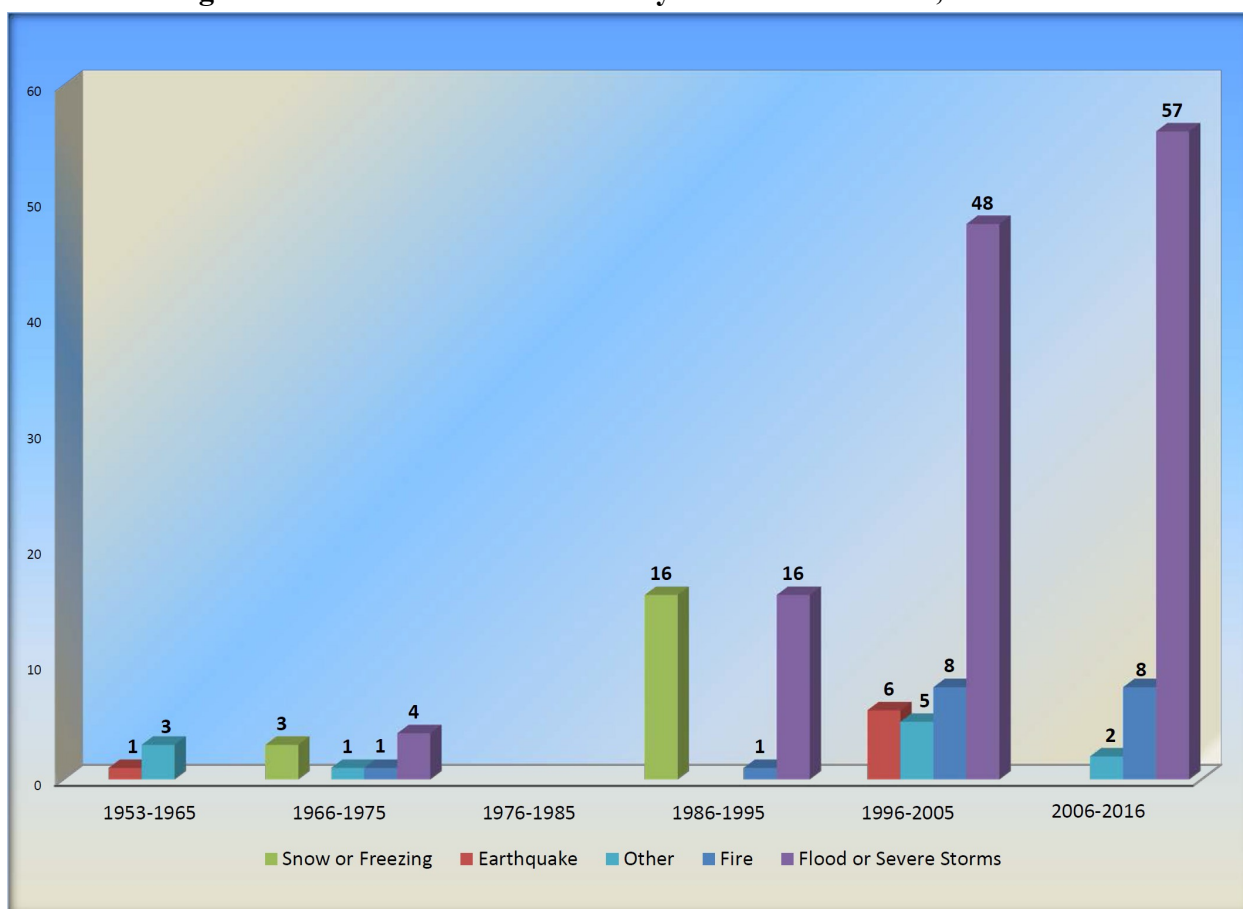




## INTRODUCTION

The number of state- and federally-declared disasters in Alaska has increased dramatically over the past six decades, especially over the last 20 years, as illustrated in the graph below. The majority of these disasters are caused by flooding associated with severe storms. Each year, these events put Alaskan communities at risk of loss of life and property. Recent studies indicate that the frequency and intensity of these storms is likely to increase, especially in the coastal regions of Alaska. The need for a sound approach to help communities become more resilient to natural disasters is more important now than ever. The Federal Emergency Management Agency (FEMA)'s Risk Mapping, Assessment and Planning (Risk MAP) Program provides Alaskan communities with the tools, resources and technical assistance they need to achieve greater disaster resilience.

**Figure 3: Alaska State and Federally Declared Disasters, 1953-2016**



In order for Alaska's communities to make informed risk management decisions, a consistent risk-based approach to identifying, assessing and planning for the mitigation of natural hazards is necessary. Recognizing the connection between reliable flood maps and flood damage is essential for protecting life and property in Alaska. This is the central purpose of Risk MAP: to provide communities with flood and



other hazard information and tools they can use to enhance their local plans and better protect their citizens. Through more accurate flood maps, risk assessment tools, and outreach support, Risk MAP strengthens local ability to make informed decisions about reducing risk and becoming more disaster resilient.

Flood hazard maps produced by FEMA have been an important tool for flood hazard mitigation in Alaska's municipal governments that participate in the National Flood Insurance Program (NFIP). The State of Alaska and its local governments rely on FEMA flood hazard maps to regulate floodplain development and otherwise mitigate for flood losses. Flood hazard maps produced by FEMA currently serve 42 Alaska borough and city governments. Three of these communities are mapped but are currently suspended from the NFIP. Additionally, two cities and one borough are in the Emergency Phase of the NFIP and have no FEMA Flood Insurance Rate Maps (FIRM) or Flood Hazard Boundary Maps (FHBM).

Unlike many other states where local governments with flood hazards have long been identified and mapped, Alaska has 122 incorporated municipal governments (cities and boroughs) that have no FEMA FIRMs. No ordinances exist to regulate floodplain development in these cities and boroughs, nor are they eligible to receive federal flood insurance. As a result, federally-backed financial assistance may in some cases be withheld, impeding economic development opportunities. Many of these communities are highly flood-prone, resulting in costly State and federal disasters without the benefit of federal flood insurance.

Of those Alaska communities that do have FIRMs, the maps and data used to create them may be outdated. In many areas of the state, property owners have invested significant financial resources over the past 40 years to prove properties are not in floodplains as defined by FEMA. If nothing is done to improve these inaccurate maps, they will continue to cost property owners. Other property owners, who are at risk of flooding, may not be aware of their flood risk because their properties are incorrectly shown outside of the floodplains.

Alaska's floodplain mapping inventory includes many miles of mapped floodplains designated as "unnumbered A-Zones". These zones lack the engineering analysis and topographic detail needed to accurately show the floodplain. There are still a number of Alaska communities have maps that have never been updated.

Significant to the state's mapping issues is the fact that Alaska is the only state lacking digital imagery and elevation data at nationally-accepted standards. The National Elevation Dataset (NED) has limited data for only a few of Alaska's participating NFIP communities. NED data are not available with sufficient accuracy for over 95% of the state. Consequently, Alaska has a substantial need to develop new science-based mapping.



## THE TRANSITION TO FEMA'S RISK MAP PROGRAM

In Federal Fiscal Year 2009, FEMA began the transition from its former mapping program, Map Modernization, to Risk MAP with funding from the National Flood Insurance Fund and Congressional appropriations for flood hazard mapping. FEMA's goal for Risk MAP is to combine flood hazard mapping, risk assessment tools, and hazard mitigation planning into one seamless program. FEMA's vision of Risk MAP has several components. These include:

- Identifying additional flood hazard data needs, and establishing a "life-cycle" approach to mapping updates,
- Conducting informative risk assessments for all watersheds in the nation, which should lead to more effective risk communication, flood mitigation planning, and flood risk reduction performance tracking,
- Ensuring hazard mitigation plans are assessed and updated every five years locally and every three years at the state level, and
- Keeping the nation's flood maps credible, enhancing their quality, and maintaining ease of data availability.

Risk MAP is an improved and integrated approach where flood hazards are identified and woven into watershed-based risk assessments and state and local mitigation planning efforts (FEMA, 2009). The intent of Risk MAP is to encourage beneficial partnerships and innovative uses of flood hazard and risk assessment data in order to maximize flood loss reduction. Risk MAP places new emphasis on enabling communities to carry data beyond flood policy applications to comprehensive risk assessments and better integration of risk information into local and state mitigation, emergency, and business plans.

The Risk MAP Program emphasizes bringing outdated and invalid flood studies into compliance with scientifically-proven methodologies, including re-delineating floodplain boundaries using high resolution topographic data. Risk MAP's primary objectives include:

- Assessing the nation's flood risk and using the information to increase public awareness of risk,
- Increasing public awareness of risk from natural hazards and establishing a baseline of local knowledge and understanding of risk management concepts,
- Ensuring 80% of the nation's flood hazards are current including accurate and valid data, and Continuing to meet statutory requirements of the NFIP through assessing on a watershed basis, the need to revise and update all floodplain areas and flood risk zones identified, delineated, or established (FEMA, 2009).



The Risk MAP Program is designed to be implemented on a watershed scale starting with an overall evaluation of eight-digit U.S. Geologic Survey Hydrologic Unit Code (HUC-8) level watersheds. Alaska has multiple HUC-8 watersheds. In geographic terms, HUC-8 watersheds are typically smaller than an average Alaska borough. The HUC-8 watersheds in Alaska are large and consist of large amounts of Federal and State owned land and may incorporate communities that don't participate in the NFIP. For example, the Upper Yukon HUC-8 consists of 60,000 square miles.

FEMA will use the new data acquired through the Risk MAP Program to not only improve its floodplain mapping inventory, but also to develop new interactive mapping products for communities to utilize when communicating risk. These products require accurate topographic and scientific studies. The FEMA business model quantifies cost versus risk levels to determine how to prioritize new and revised mapping. Historically, when this type of qualifying criteria is used, however, Alaska loses out to more densely populated areas of the country.

**Figure 4: Home on Kotzebue Sound**



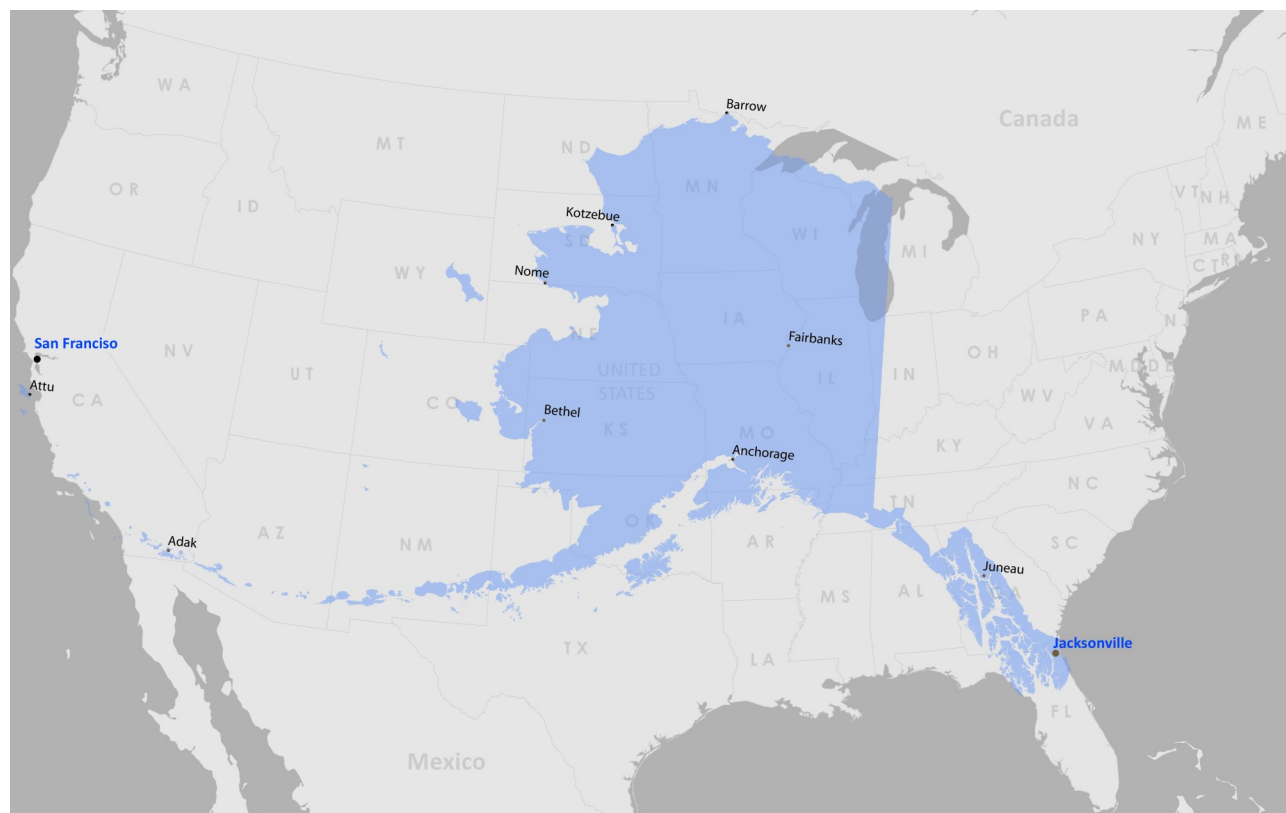




## ALASKA'S CHALLENGE

Alaska's enormous size is difficult to fathom. Alaska contains 586,412 square miles of land. The state is one-fifth the size of the Lower 48 states, two and one-half times larger than Texas, 488 times larger than Rhode Island, and larger than the next three larger states in the United States combined. As Figure 2 illustrates, Alaska end-to-end spans the distance from San Francisco, California to Jacksonville, Florida. Alaska has 6,640 miles of coastline, more than all other states combined.

**Figure 5: Alaska's Comparative Size**



While Alaska is the largest of the fifty states, it is also the most sparsely populated. Alaska's population, at 739,828 in 2016, ranks the lowest of the fifty states, with a population density of 1.3 inhabitants per square miles (0.46/km<sup>2</sup>).

Due to Alaska's vast size and sparse population, the cost of acquiring high-resolution topographic data and mapping thousands of miles of floodplain seems a daunting endeavor. Planning-level estimates indicate Alaska needs millions of dollars to acquire high-resolution topographic data and additional millions to update the current mapping inventory and convert the data to a digital GIS format. Furthermore, Alaska's rural communities are traditionally viewed as having low risk from flooding relative to the state's more



urbanized communities with much larger populations. Consequently, the level of resources historically dedicated to improving maps, particularly in rural communities, has been limited. However, disaster statistics paint a different picture. As Figure 1 on page 1 shows, federally-declared disasters for flood and severe storm events in Alaska have more than tripled over the past two decades. Figure 30 (page 91) shows the vast majority of these events have taken place in the Bethel and Yukon-Koyukuk census areas. Both census areas are comprised of small, remote, predominantly Alaska Native communities. These communities are especially vulnerable because both census areas are part of Alaska's vast unorganized borough where there is no borough form of government to provide services and other resources to address disaster events. Only six of the 68 Alaska Native villages within these two census areas participate in the NFIP. Half of the villages within these census areas are ineligible to participate in the NFIP because they are not incorporated municipalities. Storm events increasingly put these communities at risk to loss of life and property. Recent studies indicate that the frequency and intensity of these storms is likely to increase, especially in western Alaska (Terenzi, 2014).

State and Federal agencies have been concerned about the impact of flooding and other natural hazards on the safety and viability of Alaska Native villages for some time. Government Accountability Office (GAO) studies conducted in 2003 and 2009 reported that 184, or 85 percent, of Alaska's 213 Alaska Native villages were affected to some degree by flooding and erosion, most commonly caused by severe storm events on Alaska's coast or by river flooding, such as during the spring breakup of river ice. The GAO identified 31 villages (see Figure 4 on page 11) located throughout Alaska's riverine and coastal areas, which are imminently threatened by flooding and erosion. Of these villages, 12 were identified as exploring relocation options for all or a portion of the existing villages. Four of the 12 communities – Kivalina, Newtok, Shaktoolik and Shishmaref – were identified as needing to move the entire community as soon as possible.

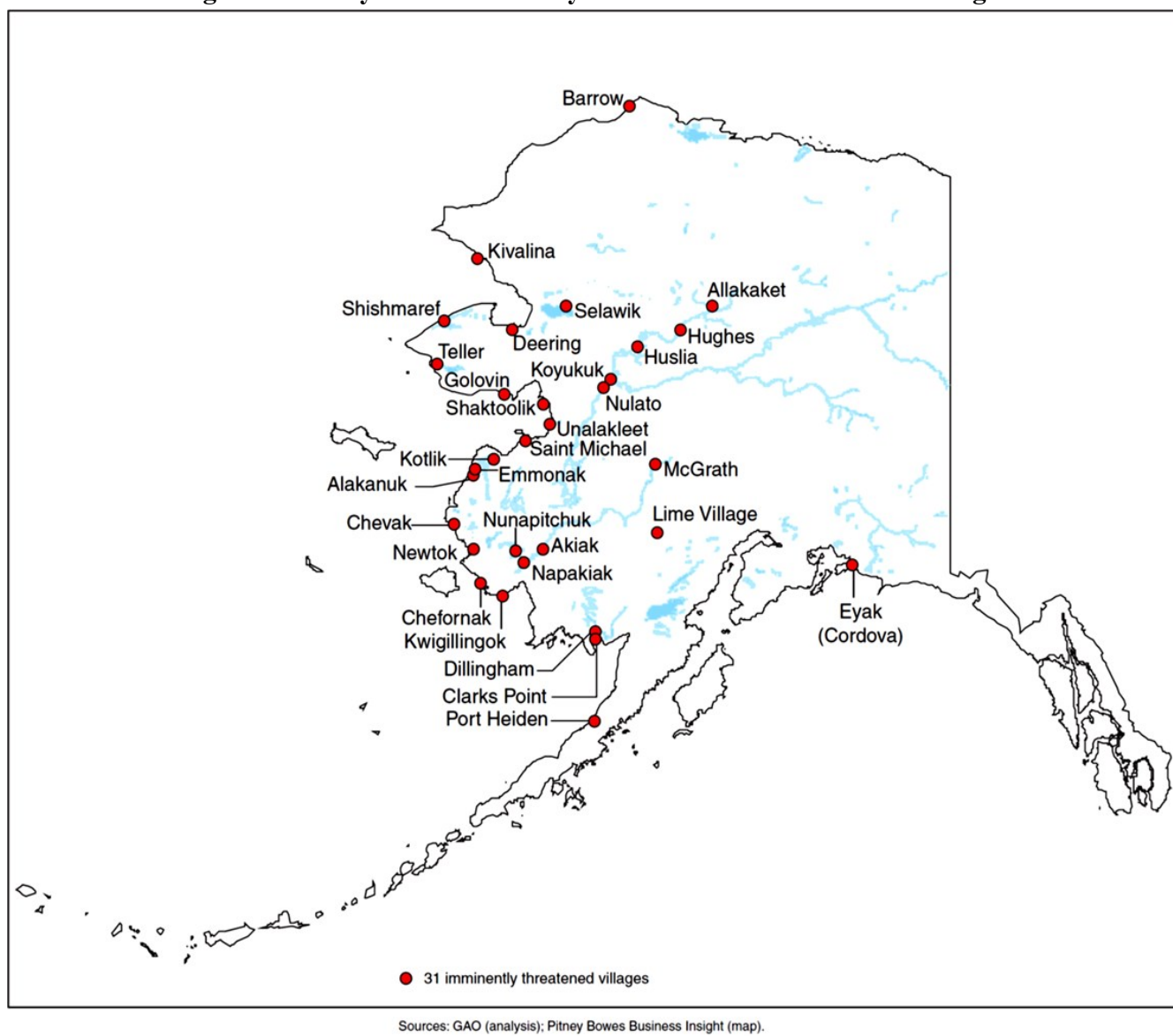
A critical challenge to Alaska's communities taking action to address their hazard issues is the glaring lack of available data. In June 2009, the Alaska Climate Change Sub-Cabinet's Research Needs Work Group reported:

*“Native and long-time Alaskan residents describe dramatic changes in Alaska's climate and the chronic and catastrophic effects these changes are having on their lifestyles and cultures. Knowledgeable scientists, engineers, leaders, and decision-makers acknowledge that climatic changes are occurring in Alaska and have great potential, in consort with other factors, to adversely impact the natural, social, economic, and infrastructure systems that Alaskans rely upon for their way of life. Nearly everyone, however, unanimously laments the paucity of data, analyses, information infrastructure, and decision-support and sharing tools necessary for effective assessment and response to such changes.”*



It is very difficult for a community to know how to respond to environmental threats without clear understanding and guidance on the nature of the threat, what the current and predicted impacts are, and what options there are to address the threat. Alaska Native villages that have made decisions about how to respond to environmental threats have relied upon studies of the threats to provide this guidance.

**Figure 6: Thirty-One Imminently-Threatened Alaska Native Villages**



Compounding this lack of information, Alaska is the only state in the nation that lacks digital imagery and elevation data at nationally-accepted standards. The horizontal and vertical reference datums established by the National Spatial Reference System -- the North American Datum of 1983 (NAD83) and the North American Vertical Datum of 1988 (NAVD88) -- have been accepted as the standard for FEMA Risk MAP



studies. However, in Alaska, the reference system does not have the density of control points to support sub-meter level accuracies for most mapping and positioning activities. In the case of the vertical datum, NAVD88 does not provide coverage to most of the western half of the state. This has created a challenge to Alaska's coastal communities, in particular, who require accurate land elevations and water depths to regulate floodplains, build flood protection infrastructure, model storm surge, and monitor sea-levels.

### ALASKA'S OPPORTUNITY

The need for high-resolution topography is not limited to floodplain mapping. High-resolution topography is a product sought by many organizations, from private enterprise to all levels of government. Many federal agencies benefit from high-resolution topographic data including the U.S. Department of Agriculture (USDA), U.S. Geological Survey (USGS), U.S. Army Corps of Engineers, the National Oceanic and Atmospheric Administration (NOAA) and FEMA. State agencies benefitting from improved floodplain mapping include Commerce, the Department of Military and Veteran's Affairs, and the Department of Natural Resources. Local governments participating in the NFIP, in particular, have much to gain for local residents.

DCRA and FEMA have collaborated for more than 30 years to reduce loss of life and property through strategies and programs that reduce natural hazard risk. As the designated State Coordinating Agency for the NFIP, DCRA has actively participated in studying the status of flood hazard mapping and making recommendations for updating or creating new maps.

Over the past several years, the Alaska Risk MAP Coordinator has been engaged in a number of collaborative partnerships to increase resilience in Alaska's communities. These partnerships, discussed more thoroughly on page XX, can greatly enhance the quality of Risk MAP processed in Alaska's communities.

DCRA values its partnership with FEMA in the implementation of the Risk MAP Program in Alaska. This partnership helps achieve DCRA's mission of *promoting strong communities and healthy economies, because resilient communities are strong communities*. This document, *Alaska Mapping Business Plan: Integrating Mapping, Risk Assessment, and Resilience Planning*, represents a critical step in comprehensively evaluating the status of Alaska's flood maps and hazard data, setting priorities for future hazard and mapping studies, and outlining a collaborative relationship with FEMA to fully execute the Risk MAP strategy for the benefit of Alaska's communities, local governments, tribal entities, and residents. The purpose of this document is to provide FEMA with Alaska's strategy for participation in the Risk MAP Program. The substantial investments FEMA is making in studying, analyzing and remapping large sections of Alaska could be leveraged by other government agencies to co-produce greatly improved mapping and risk assessment products that will benefit far more than just floodplain mapping programs.





During the coming year this plan will be circulated to state agencies, private sector organizations, non-profits entities, and political leaders for review and comment. As this process is carried out, DCRA hopes to maintain the Alaska Mapping Business Plan as a living document that will lead to stronger support of FEMA's Risk MAP Program and new partnerships to increase community resilience in the future.

**Figure 7: Storm damage in the Village of Kotlik, Alaska, November 2013**







**Figure 8: Ice Jam on the Kenai River, 2007**





## CHAPTER ONE: FEMA'S RISK MAP PROGRAM

FEMA's flood hazard maps are one of the essential tools for flood hazard mitigation and implementation of the NFIP in the United States. These maps are used an estimated 20 million times annually in the private and public sectors. Lending institutions and insurance companies use them to identify who needs flood insurance and to determine flood insurance rates. Community planning officials, land developers, and engineers use them for designing new buildings and infrastructure to avoid flooding. Most importantly, states and communities use them for hazard mitigation planning and emergency management. Finally, federal agencies use them when implementing Executive Order 11988, Floodplain Management, which requires federal agencies to avoid short- and long-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

FEMA's Map Modernization (Map Mod) effort transformed most of the nation's flood hazard mapping inventory to 21st century digital technology and restored confidence in the reliability of floodplain boundaries, while making some updates to underlying engineering data. Map Mod's large-scale overhaul of the nation's flood hazard maps included data collection and analysis, map production, product delivery, and program management activities. Map Mod provided reliable digital flood hazard data and maps for approximately 92% of the nation's population.

The dynamic nature of floodplains requires ongoing analysis of flood hazards to maintain a reliable and valid data inventory. Failing to keep current with the changing and dynamic nature of watersheds ultimately leads to unwise decisions that place homeowners and communities at increased risk of flooding. Conversely, overstated hazards not based on accurate data can result in potentially unnecessary construction costs and incorrect insurance rating decisions. Accurate and reliable flood hazard information is a necessary component of ensuring the fiscal soundness of the NFIP.

In order to leverage the successes of Map Mod and further enhance the use, value, and accuracy of flood hazard mapping and related data, FEMA developed the Risk MAP Program. Risk MAP represents a philosophical and tactical shift in how FEMA delivers information necessary for flood hazard reduction. The focus has shifted from digitizing maps (Map Mod) to evaluating flood hazard data needs, meeting flood hazard data needs, expanding data availability, and improving data accessibility.

FEMA began the transition from Map Mod to Risk MAP during federal fiscal year 2009. Risk MAP combines flood hazard mapping, risk assessment and mitigation planning into one seamless program. It is an improved and integrated approach where hazards are identified and woven into watershed-based risk assessments and state/local mitigation plans. The intent of Risk MAP is to encourage partnerships and innovative uses of flood hazard and risk assessment data in order to reduce flood and other hazard risk.



### VISION

Risk MAP's overall vision is to work collectively with state, local, and tribal entities to deliver quality data that increases public awareness and leads to action that reduces risk to life and property. It also encourages informed risk management decisions and actions to mitigate risk through a consistent risk-based approach to assessing potential vulnerability and losses and providing the tools to communicate the message. By analyzing and illustrating flood risk, communities and the American public can better understand their risk and make informed decisions to reduce overall vulnerability (FEMA, 2009).

### GOALS

The goals for Risk MAP, as articulated in the Risk MAP 2012-2017 Multi-Year Plan and illustrated in Figure X, are: 1) Address gaps in flood hazard data to form a solid foundation for flood risk assessments, floodplain management, and actuarial soundness of the NFIP; 2) Ensure that a measurable increase of the public's awareness and understanding of risk management results in a measurable reduction of current and future vulnerability to flooding; 3) Lead and support state, local, and tribal communities to effectively engage in risk-based mitigation planning resulting in sustainable actions that reduce or eliminate risks to life and property from natural hazards; 4) Provide an enhanced digital platform that improves management of limited Risk MAP resources, stewards information produced by Risk MAP, and improves sharing and

Figure 9: Risk MAP Goals and Objectives





communication of risk data and related products to all levels of government and the public; 5) Align Risk Analysis programs and develop synergies to enhance decision-making capabilities through effective risk communication and management (FEMA, 2012).

## LIFECYCLE

The concept and progression of Risk MAP is best described as a “lifecycle” with the overall purpose of reducing losses to life and property. Hazard data is used for risk assessments, which are incorporated into mitigation and other community plans where risk reduction measures are identified for future action.

Figure 10: Risk MAP Lifecycle







Future hazard identification requirements are developed and the cycle starts anew. Risk MAP's lifecycle is comprised of four substantive areas including identifying risk, assessing risk, communicating risk, and reducing risk.

### IMPLEMENTATION

A cornerstone of FEMA's Risk MAP Program is collaborating with state, local, and tribal entities to reach program goals. In administering the Risk MAP Program, FEMA utilizes mapping partners to update flood hazard data and maps. FEMA will also rely on local communities, regional entities, tribes, and state agencies to ensure updated information is used in making informed decisions regarding planning, community development, and hazard mitigation. FEMA has developed six primary strategies for implementing the Risk MAP Program including:

- Flood Hazard Mapping and Engineering
- Levee Strategy
- Coastal Strategy
- Elevation Data
- Risk Assessment
- Multi-Hazard Mitigation Planning

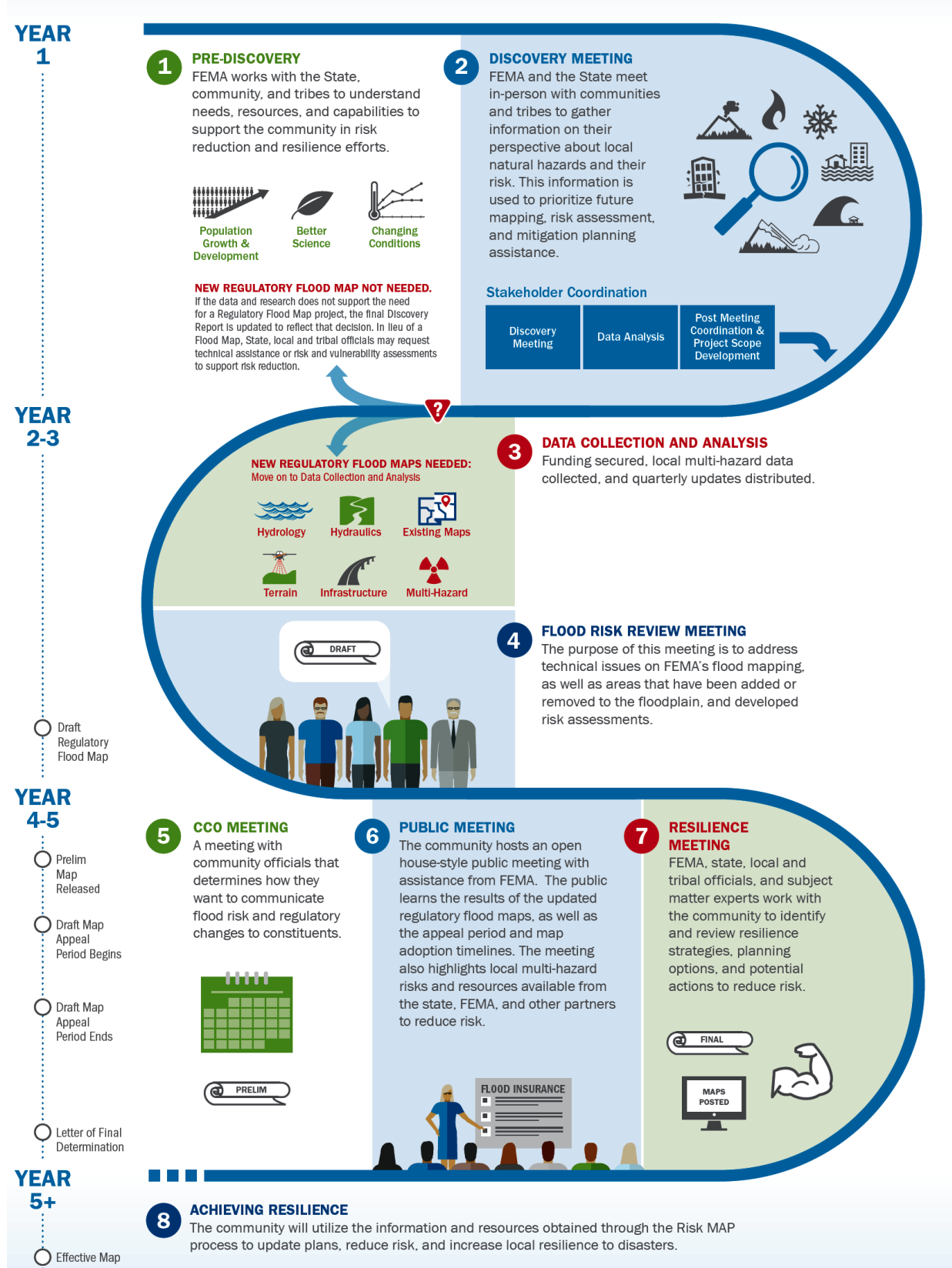
Figure 11 on the following page illustrates the Risk MAP process FEMA Region 10 has identified, focusing on the program's three processes:

- **Mapping:** Flood Insurance Rate Maps and Flood Insurance Studies
- **Assessment:** Hazard Risk assessment and modeling
- **Planning:** Strategy implementation and plan integration





Figure 11: FEMA Region 10 Risk MAP Process





### COOPERATING TECHNICAL PARTNERS PROGRAM

Central to FEMA's Risk MAP Program is collaboration and cooperation established by mapping partnerships with state, local, and tribal entities to update flood hazard data and maps. The Cooperating Technical Partners (CTP) Program is an innovative approach to creating these partnerships between FEMA and participating local communities, regional entities, tribes, and state agencies that have the interest and capability to become more active participants in the FEMA flood hazard mapping program.

The Cooperating Technical Partners (CTP) Program was developed by FEMA for State, local, regional, or tribal organizations and universities with the interest, capability, and resources to be active partners in FEMA's flood hazard mapping program. By becoming a CTP, a partner formalizes its contribution and commitment to the program ensuring better overall flood risk identification through the development of reliable and up-to-date flood maps.

In addition to the State of Alaska, participating CTP communities in Alaska include the Municipality of Anchorage, the City and Borough of Juneau, the Matanuska Susitna Borough, and the Fairbanks North Star Borough.

#### *Objectives of the CTP Program*

The overall objective of the CTP Program is to update the Nation's flood maps through the following tasks:

- Recognize partners that are actively working to identify and map their flood risk while incorporating this information into official FEMA flood hazard data
- Maximize limited funding by combining resources and aligning State, local, regional, and tribal local goals with FEMA's national objectives
- Maintain national standards consistent with National Flood Insurance Program (NFIP) regulations; and
- Build and maintain partner capabilities.

#### *Benefits of Participation in the Program*

The advantages and benefits of being a CTP include:

- Develop more detailed maps by incorporating local geospatial data into FEMA's flood hazard maps
- Receive streamlined FEMA customer service, access to existing FEMA data, national recognition, technical assistance, and FEMA's Mapping Information Platform (MIP).
- Mentoring support, shared best practices, online resources, and free training to achieve more efficient and effective flood risk development; and
- May be eligible to participate in the FEMA Community Rating System (CRS) and receive CRS credits for flood hazard reduction activities, which may result in discounted flood insurance premiums for

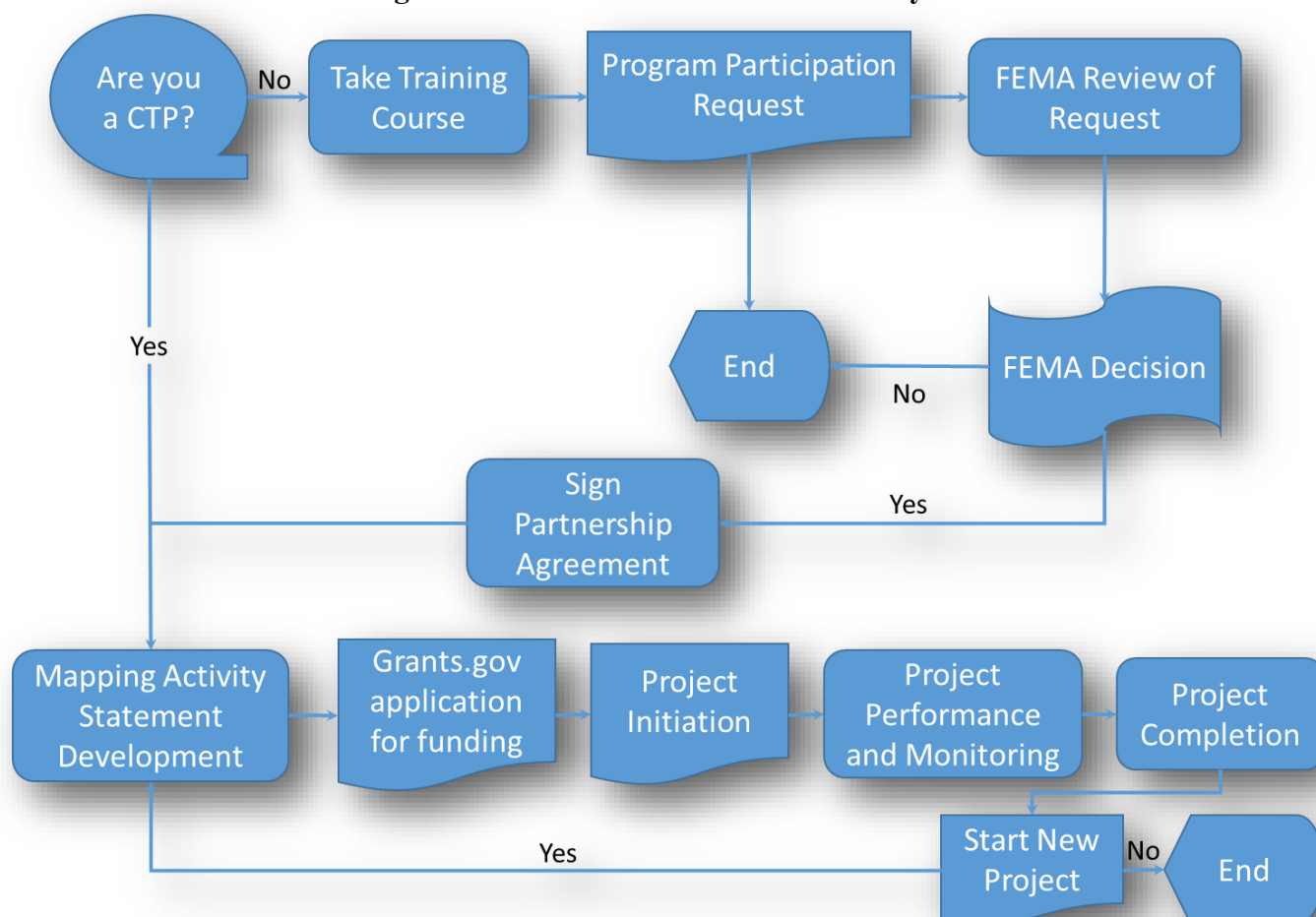


property owners.

### ***CTP Relationship to Risk MAP***

Through the Risk MAP Program, CTPs will continue to be involved with the creation of flood hazard data, but will also be involved with the risk assessment and planning activities within Risk MAP. CTPs are encouraged to create partnerships and relationships within their organization, especially with groups responsible for risk assessment and planning activities. These strategic partnerships at the State or local level enable FEMA and its partners to accomplish Risk MAP's goals.

**Figure 12: Potential CTP Partner Life Cycle**





**Figure 13: Flooding in Wasilla, Alaska Neighborhood, 2012**



*Photo: Jon Burn, Battalion Chief, Matanuska-Susitna Borough Fire Department*



## CHAPTER TWO: THE NFIP AND FLOOD HAZARD MAPPING

### NATIONAL FLOOD INSURANCE PROGRAM

In 1968, Congress created the NFIP to help provide a means for property owners to financially protect themselves. The Flood Insurance and Mitigation Administration (FIMA), a component of FEMA, manages the NFIP. The NFIP includes three primary components: 1) flood insurance; 2) floodplain management; and 3) flood hazard mapping.

Nearly 20,000 communities across the United States and its territories participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally-backed flood insurance available to homeowners, renters, and business owners in these communities. Of noteworthy importance, community participation in the NFIP is voluntary.

Flood insurance is designed to provide an alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Flood damage is reduced by nearly \$1 billion a year through communities implementing sound floodplain management requirements and property owners purchasing of flood insurance. Additionally, buildings constructed in compliance with NFIP building standards suffer approximately 80% less damage annually than those not built in compliance.

Joining the NFIP is a large benefit to local residents due to low-cost flood insurance, but it is also a large responsibility for municipalities. To participate in the NFIP, local governments agree to complete the following:

- Adopt and enforce a flood damage prevention ordinance;
- Require permits for all types of development in the floodplain;
- Assure building sites are reasonably safe from flooding;
- Estimate flood elevations that were not determined by FEMA;
- Require new or improved homes to be elevated above Base Flood Elevation (BFE);
- Require other buildings to be elevated or flood-proofed;
- Conduct field inspections and city violations;
- Require Elevation Certificates to document compliance;
- Carefully consider variances;
- Resolve non-compliance and violations; and
- Advise FEMA when updates to flood maps are needed





### FLOOD HAZARD MAPPING

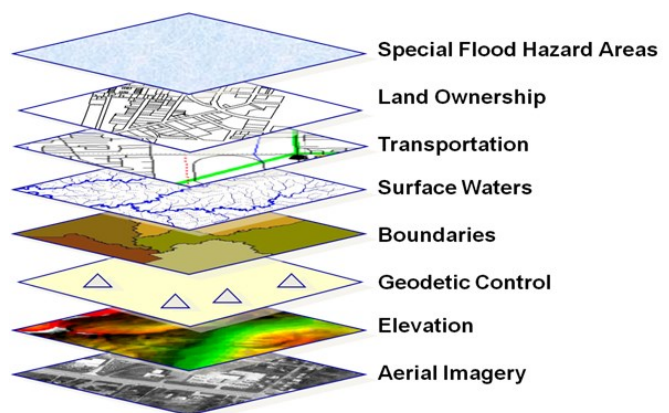
In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the nation's floodplains. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance. These maps are Flood Insurance Rate Maps, commonly referred to as FIRMs. Each NFIP community should have or be in the process of having FIRMs for their community.

Communities regulate the floodplain for a variety of reasons, but some of the most important reasons include: 1) protect people and property; 2) ensure federal flood insurance and disaster assistance is available; 3) save tax dollars; 4) avoid liability and litigation; and 5) reduce future flood losses. Participation in the NFIP is based on an agreement between a local government and the federal government. If a community adopts and enforces a floodplain management ordinance that meets program standards, the federal government will make flood insurance available within the community at a low cost.

### *Digital Flood Insurance Rate Maps and Geographic Information Systems*

The NFIP is adopting new digital products, including Geographic Information System (GIS)-based products. This plan will allow the continued use of paper maps. However, for NFIP stakeholders interested in adopting the new digital processes, this initiative will enable them to take full advantage of the new digital maps FEMA is producing through the (legacy) Map Mod and Risk MAP programs. FEMA's goal is to transition to digital processes for distributing and reading the flood maps. These new digital capabilities of the flood maps will:

- Enable significant advantages in capability, precision, and cost;
- Reduce costs associated with paper map production, handling and storage;
- Encourage the use of quality local data to make administration of the NFIP more efficient and effective.



The Standard Digital Flood Insurance Rate Map (DFIRM) Database is a digital version of the FEMA flood insurance rate map that is designed for use with digital mapping and analysis software. DFIRM Databases have been completed for a number of communities and counties throughout the nation. FEMA designed the DFIRM Database product to be used with (GIS) software.

GIS software allows users to access, view, and analyze mapping information using specialized data. The



Standard DFIRM Database is designed to provide the user with the ability to determine the flood zone, base flood elevation and the floodway status for a particular location. It also has NFIP community information, map panel information, cross section and hydraulic structure information, Coastal Barrier Resource System information (if applicable), and base map information like road, stream, and public land survey data.

### ***Coordinated Needs Management Strategy (CNMS)***

The CNMS is a FEMA initiative to update the way FEMA organizes, stores, and analyzes flood hazard mapping needs information for communities. It defines an approach and structure for the identification and management of flood hazard mapping needs that will provide support to data driven planning and the flood map update investment process in a geospatial environment. CNMS tracks the lifecycle of needs, specifying opportunities to capture needs and proposing methods for their evaluation to inform the planning process.

From a technical perspective, the CNMS establishes a geospatially enabled effective means for users to enter, monitor, and update their inventory of needs. The basic structure of the database is two containers: one to store information about why and where effective studies are “broken”, and the other to record community concerns and requests. All information can be displayed simultaneously because they are geo-referenced.

The goal of the CNMS is to define the validity of the engineering study data, at the stream level, within the communities mapped. Participating communities coordinate with the FEMA Regional Office to have all flooding source centerlines included in CNMS and to have every segment contained in the CNMS stream network defined as valid, invalid, or in progress. The intent of having this information is to define the mapping need of each engineering study, determine the validity of the engineering study, and time-stamp the engineering study. Overall, FEMA wants to establish a national baseline record of New, Validated or Updated Engineering (NVUE) reporting geospatially that will influence future program production planning activities.

Through the CNMS, FEMA is evaluating its inventory of stream and coastal miles nationwide and establishing which miles meet NVUE. FEMA has committed to the US Congress that 80% percent of the miles in its inventory will meet this standard. Currently, based on a countywide evaluation of NVUE data, FEMA estimates that 51% of its inventory is compliant with NVUE nationwide. To reach 80%, FEMA will restudy 183,000 miles of stream or coastline nationwide during Risk MAP. CNMS is in its infancy, and the data will be updated over the next year, based on a on a stream reach-by-stream-reach and coastal-reach-by-coastal-reach evaluation of its inventory. This will cause the current estimate of NVUE-compliant miles to change.

In order to be compliant with NVUE quality standards, a stream must be digital (modernized) and



be characterized by one of the following:

- A new detailed study, or
- A new approximate study based on topography, or
- An old detailed study that has been updated, or
- An old approximate study that has been updated.

The initial CNMS database is being created at a national level by FEMA headquarters and its contractors. Since CNMS is going to play such an important role in prioritization, it is essential that this database is built properly. It must be maintained and updated frequently to assure accuracy and to demonstrate the appropriate levels of need.

As noted in the section on the *Alaska Prioritization and Future Studies Sequencing Decision Support System* (page 101) the CNMS data for Alaska currently shows that all stream miles are Non-NVUE compliant, thus all watersheds have been given the same rank for this indicator in the decision support system. Additionally, FEMA's contractor STARR indicated that the only streams currently included in CNMS for the State of Alaska are those currently in DFIRM format. This excludes a large number of streams and makes this dataset incomplete. When the CNMS data is updated and some distinctions between the watersheds can be made, this indicator can be introduced to the algorithm at that time. Ultimately, CNMS should contribute heavily to the Needs factor in DCRA's decision support system (see page 77).

**Figure 14: City of Nenana, 2008 Flood**





## CHAPTER THREE: ALASKA'S NFIP-PARTICIPATING LOCAL GOVERNMENTS

Floods have been, and continue to be, a destructive natural hazard in terms of economic loss to Alaska's local governments and the residents that live in these communities. Flooding is of great concern in Alaska because there are more than 3,000 rivers, over 5% of Alaska's land area is covered with glaciers, and more than 40,000 miles of coastline provide a multitude of opportunities for flooding. Unfortunately, residents of many flood-prone Alaskan communities do not have flood insurance even though they may live near water. One hundred-eight or 66 %<sup>1</sup> of Alaska's 164 incorporated communities do not participate in the NFIP.

Slightly more than one-third (34%) of Alaska's 164 incorporated municipalities participate in the NFIP. In addition to the 31 NFIP-participating cities and boroughs, 25 cities located within the jurisdictional boundaries of participating boroughs enjoy the benefits of NFIP participation. Three municipalities (2 %) participate in the NFIP (Kenai, Soldotna, and Wrangell) but are considered "suspended" and thus are not eligible for federal flood insurance. The City of Delta Junction made the decision to withdraw from the NFIP in 2015.

It is noteworthy; however, that the majority of Alaska's population resides within the 56 communities that participate in the NFIP. As Figure 15 illustrates on the following page, 89 percent of Alaska's population participates in the NFIP. Eighty-six percent of the state population residing in organized boroughs participates in the program, and three percent of the state population residing in cities in the unorganized borough participates in the NFIP.

When Alaska's Unorganized Borough is considered alone, however, the figures tell a slightly different story. Only 32% of the state population living in Alaska's Unorganized Borough participate in the NFIP. Forty-three percent of the population living in cities in the Unorganized Borough do not participate in the NFIP and 25% of the population living in unincorporated villages do not. It is of concern that most of Alaska's federally-declared disasters involving flood or severe storm events have occurred in the Unorganized Borough within the Bethel and Yukon-Koyukuk Census Areas. (See Figure 3, page 5.)

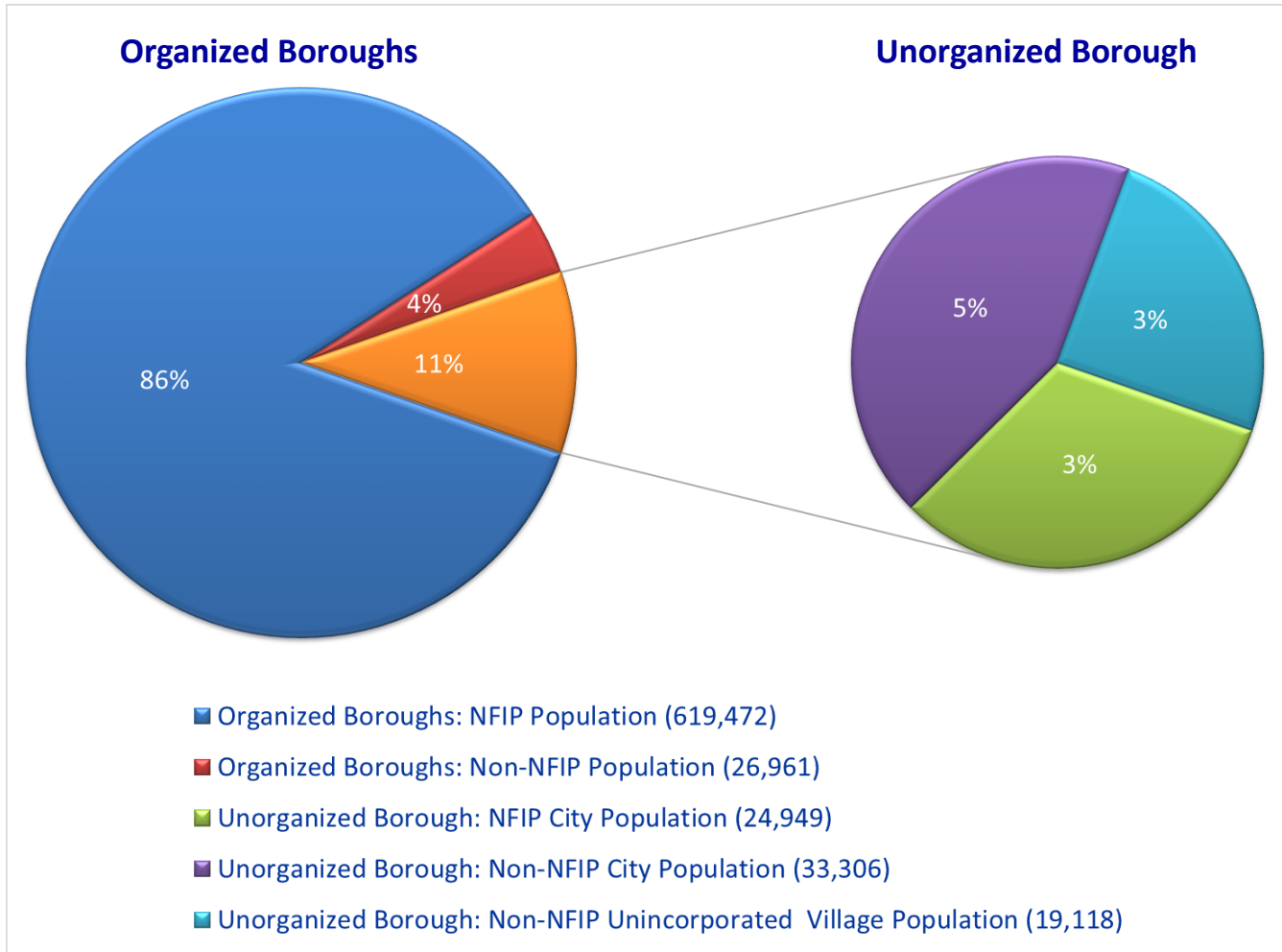
Figure 16, page 29, provides a map identifying the locations of the eleven boroughs and twenty-one cities that participate in the NFIP. Table 1, page 30, provides a listing of the 12 boroughs and 19 cities participating in the NFIP. Table 10 in Appendix 3 provides a more detailed overview of NFIP-participating communities by population and form of government, including individual communities within boroughs.

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<sup>1</sup> This includes the 3 communities, the Cities of Kenai, Soldotna, and Wrangell, that are suspended from the NFIP, and 1 community, the City of Delta Junction, that withdrew from the NFIP.

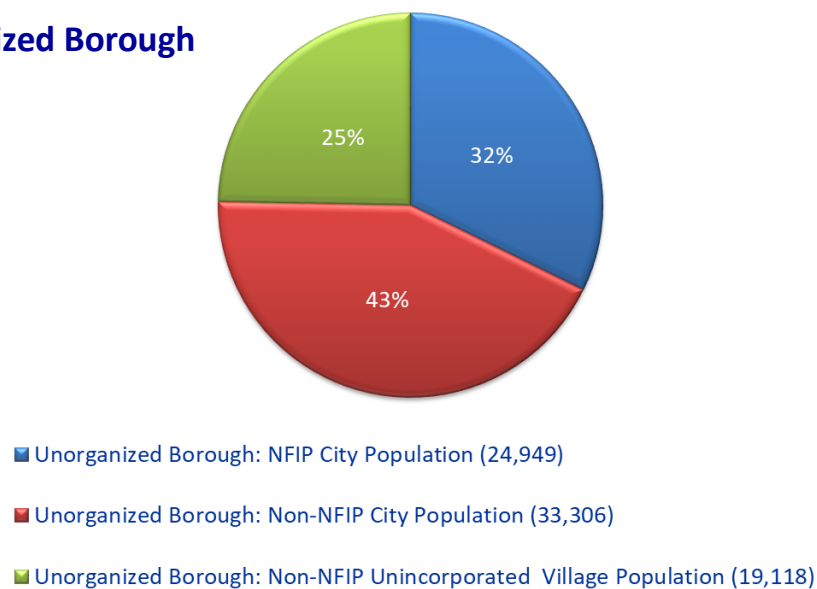


**Figure 15: NFIP Percentage of Alaska's Population in Organized and Unorganized Boroughs**



*\*Excludes the Cities of Kenai and Soldotna and the City and Borough of Wrangell*

### Unorganized Borough

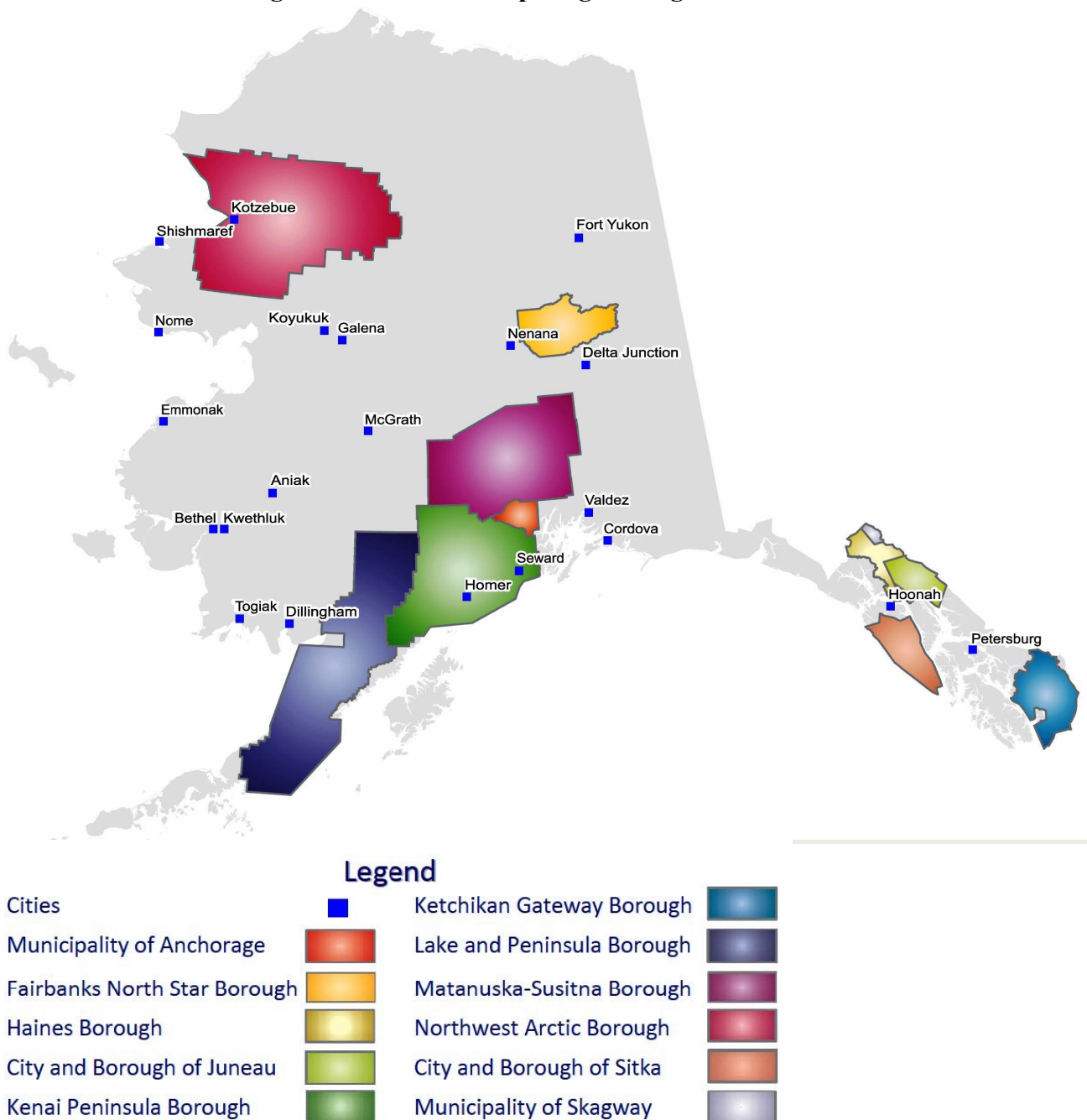






Twelve boroughs\* and 19 cities participate in the NFIP. The location of these municipalities is shown on the map in Figure 7, below.

**Figure 16: NFIP Participating Boroughs and Cities**



*\*The City of Petersburg is now Petersburg Borough. Delta Junction has since withdrawn from the NFIP.*



**Table 1: NFIP Participating Communities in Alaska**

Community Participation	NFIP Participant	Municipal Govt.	#Communities	%
In Program	City of Aniak	19 cities	56	34%
	City of Bethel			
	City of Cordova			
	City of Dillingham			
	City of Emmonak			
	City of Fort Yukon			
	City of Galena			
	City of Homer			
	City of Hoonah			
	City of Kotzebue			
	City of Koyukuk			
	City of Kwethluk			
	City of McGrath			
	City of Nenana			
	City of Nome			
	City of Seward			
	City of Shishmaref			
	City of Togiak			
	City of Valdez			
	Municipality of Anchorage	12 Boroughs plus 25 Cities located within the boundaries of the 12 Boroughs		
	Fairbanks North Star Borough			
	Haines Borough			
	City and Borough of Juneau			
	Kenai Peninsula Borough			
	Ketchikan Gateway Borough			
Lake and Peninsula Borough				
Matanuska-Susitna Borough				
Northwest Arctic Borough				
Petersburg Borough				
City and Borough of Sitka				
Municipality of Skagway				
Suspended - In Program	City of Kenai	2 Cities, 1 Borough suspended	3	2%
	City of Soldotna			
	City and Borough of Wrangell			
Withdrawn	City of Delta Junction		105	64%
Not in Program	10First Class Cities, 87 Second Class Cities, 2 Home Rule City, 3 Home Rule Boroughs, and 3 Second Class Boroughs			
Total			164	100%



## NFIP COMMUNITY CHARACTERISTICS

The average population of a NFIP-participating community is 21,500 residents (2016). Compared to all Alaska municipalities, NFIP municipalities are generally more urban or semi-urban in character, have larger populations, experience less dramatic population swings, have higher per capita income, and lower poverty rates.

### Local Government

Ninety-five percent of the NFIP-participating population is located within borough governments; five percent is located within city governments. Of the 19 NFIP city government participants, the majority are not located within an organized borough. In other words, these communities are without a regional form of government.

### Population

As municipalities that are enrolled in the NFIP tend to be more urban in character, they have also experienced slightly less dramatic population swings during the 2010 to 2016 time period. Most NFIP-participating communities have increased in population over the past ten years. On average, NFIP participants grew 8.21% from 2010 to 2016. Population growth has ranged from .44% (City and Borough of Sitka) to 83.8% (Northwest Arctic Borough). During this same time period, seven NFIP participating communities declined in population. Population decline ranged from -.12% (Lake and Peninsula Borough) to -12.72% (City of McGrath). In total, nearly one-fourth (23%) of NFIP participants experienced population losses during the 2010 to 2016 period. The rural and urban population change divide among NFIP communities remains consistent with statewide trends, with rural NFIP participants generally experiencing greater population losses than the urban NFIP communities.



**Table 2: NFIP Local Government, Population and Population Change**

NFIP Participant	Incorporation Type	Unorganized Borough	2010 Population	2016 Estimated Pop.	2010-2016 Pop. Change
Municipality of Anchorage	Unified Home Rule Municipality	No	291,826	299,037	2.47%
Fairbanks North Star Borough	2nd Class Borough	No	97,581	98,957	1.41%
Haines Borough	Home Rule Borough	No	2,508	2,466	-1.67%
City and Borough of Juneau	Unified Home Rule Municipality	No	31,275	32,739	4.68%
Kenai Peninsula Borough	2nd Class Borough	No	36,441	58,060	59.33%
Ketchikan Gateway Borough	2nd Class Borough	No	13,477	13,758	2.09%
Lake and Peninsula Borough	Home Rule Borough	No	1,631	1,629	-0.12%
Matanuska-Susitna Borough	2nd Class Borough	No	88,995	102,598	15.29%
Northwest Arctic Borough	Home Rule Borough	No	4,322	7,944	83.80%
Petersburg Borough	Non-Unified Home Rule Borough	No	2,948	3,179	7.84%
City and Borough of Sitka	Unified Home Rule Municipality	No	8,881	8,920	0.44%
Municipality of Skagway	1st Class Borough	No	968	1,065	10.02%
City of Aniak	2nd Class City	Yes	501	517	3.19%
City of Bethel	2nd Class City	Yes	6,080	6,244	2.70%
City of Cordova	Home Rule City	Yes	2,239	2,386	6.57%
City of Dillingham	1st Class City	Yes	2,329	2,316	-0.56%
City of Emmonak	2nd Class City	Yes	762	856	12.34%
City of Fort Yukon	2nd Class City	Yes	583	558	-4.29%
City of Galena	1st Class City	Yes	470	488	3.83%
City of Homer	1st Class City	Yes	5,003	5,252	4.98%
City of Hoonah	1st Class City	Yes	760	793	4.34%
City of Kotzebue	2nd Class City	Yes	3,201	3,295	2.94%
City of Koyukuk	2nd Class City	Yes	96	97	1.04%
City of Kwethluk	2nd Class City	Yes	721	805	11.65%
City of McGrath	2nd Class City	Yes	346	302	-12.72%
City of Nenana	Home Rule City	Yes	378	381	0.79%
City of Nome	1st Class City	Yes	3,598	3,777	4.97%
City of Seward	Home Rule City	Yes	2,693	2,663	-1.11%
City of Shishmaref	2nd Class City	Yes	563	597	6.04%
City of Togiak	2nd Class City	Yes	817	893	9.30%
City of Valdez	Home Rule City	Yes	3,976	3,939	-0.93%
TOTAL			615,969	666,511	8.04%
AVERAGE			19,870	21,500	7.76%



### Other Community Characteristics

NFIP participants are located either on Alaska's coast (25%) or on rivers (38%). Some NFIP communities are coastal and riverine (38%). Compared to all Alaska municipalities, NFIP participants have significantly higher rates of households with adequate plumbing – including both piped water and wastewater utilities. Only three communities are without piped water and wastewater: Koyukuk, Kwethluk, and Shishmaref. NFIP participants range in total quantity of local housing units from 55 (Koyukuk) to 107,332 (Municipality of Anchorage) housing units. On average, NFIP participants have 7,428 housing units.

**Table 3: Other Community Characteristics**

NFIP Participant	Coastal or Riverine	Sewer	Water	2000 HH W/O Plumbing	Watering Point	Community Well	Honey Bucket Pit	Honey Bucket Haul	Housing Units
Municipality of Anchorage	Both	Yes	Yes	1	No	Yes	No	No	107,332
City of Aniak	River	Yes	No	15	Yes	Yes	Yes	No	166
City of Bethel	River	Yes	Yes	10	Yes	Yes	No	No	1,896
City of Cordova	Both	Yes	Yes	3	No	No	No	No	922
City of Delta Junction	River	No	No	4	No	Yes	No	No	377
City of Dillingham	Both	Yes	Yes	7	No	Yes	No	No	855
City of Emmonak	River	Yes	Yes	12	Yes	No	No	No	185
Fairbanks North Star	River			7					36,441
City of Fort Yukon	River	No	Yes	54	Yes	Yes	Yes	Yes	246
City of Galena	River	Yes	Yes	37	Yes	Yes	No	Yes	190
Haines Borough	Both			16					1,149
City of Homer	Coastal	Yes	Yes	4	No	No	No	No	2,235
City of Hoonah	Coastal	Yes	Yes	4	No	No	No	No	305
City and Borough of Juneau	Both	Yes	Yes	1	No	Yes	No	No	12,187
Kenai Peninsula Borough	Both			7					22,161
Ketchikan Gateway	Both			2					5,305
City of Kotzebue	Coastal	Yes	Yes	7	No	No	Yes	No	1,007
City of Koyukuk	River	No	No	100	Yes	Yes	Yes	No	55
City of Kwethluk	River	No	No	100	Yes	Yes	Yes	No	199
Lake and Peninsula	Both			14					553
Matanuska-Susitna	River			8					31,824
City of McGrath	River	Yes	Yes	8	Yes	No	No	No	213
City of Nenana	River	Yes	Yes	5	Yes	Yes	No	No	210
City of Nome	Both	Yes	Yes	5	No	Yes	No	Yes	1,356
Northwest Arctic Borough	Both			22					1,919
Petersburg Borough	Coastal	Yes	Yes	2	No	No	No	No	1,367
City of Seward	Both	Yes	Yes	1	No	Yes	No	No	1,058
City of Shishmaref	Coastal	No	No	96	Yes	No	No	Yes	148
City and Borough of Sitka	Coastal	Yes	Yes	1	No	No	No	No	3,545
Municipality of Skagway	Both	Yes	Yes	6	No	Yes	No	No	436
City of Togiak	Coastal	Yes	Yes	38	Yes	Yes	No	No	221
City of Valdez	Coastal	Yes	Yes	2	No	Yes	No	No	1,645





### FEMA CHARACTERISTICS

Several programs administered and funded by FEMA work in concert with Risk MAP to achieve the goals and objectives of the Risk MAP Program. These programs, and the participation in them by Alaska's NFIP communities, are discussed in the following sections.

#### *Hazard Mitigation Plans*

FEMA-funded Hazard Mitigation Plans (HMPs) form the foundation of a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. HMPs are community-driven, living documents that communities use to reduce their vulnerability to hazards. The plan and its process show the link between land-use decisions and vulnerability. The HMP serves as a tool to be used by planners or other officials to advise and inform decision makers.

State, Indian Tribal, and local governments are required to develop a hazard mitigation plan as a condition for receiving certain types of non-emergency disaster assistance, including Hazard Mitigation Grants.

Hazard Mitigation Plans are significant to the Risk MAP Program because one of the goals of Risk MAP is to lead and support states, local, and tribal communities to effectively engage in risk-based mitigation planning. Risk MAP products can provide crucial information to communities to analyze, incorporate into their HMP updates, and identify actionable strategies that reduce risks. The majority of Alaska's NFIP-participating communities have adopted a local hazard mitigation plan, although more than one-third of them have expired with no apparent update planned. (See Table 4 page 35).

#### *Cooperating Technical Partnerships*

As noted earlier, the CTP Program is the means through which FEMA's Risk MAP Program is implemented. While DCRA implements the State of Alaska's Risk MAP Program through a Cooperating Technical Partnership with FEMA, Alaska's local governments have the opportunity to enter into Cooperating Technical Partnerships with FEMA for mapping projects taking place within their jurisdictional boundaries.

Each participating CTP community enters into an agreement with FEMA to do certain mapping projects documented in mutually agreed upon Mapping Activity Statements (MAS). Community partners will receive Community Rating System credits (see next section), which may lead to discounted flood insurance premiums for property owners.

Four NFIP-participating communities have CTP agreements with FEMA including: the Municipality of Anchorage, Fairbanks North Star Borough, City and Borough of Juneau, and the Matanuska- Susitna Borough. (See Table 4, page 35).



## Community Rating System

The Community Rating System (CRS) is a voluntary incentive program of the National Flood Insurance Program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: reducing flood losses; facilitating accurate insurance rating; and promoting the awareness of flood insurance. Currently seven NFIP-participating communities take part in the CRS: the Municipality of Anchorage, City of Homer, Kenai Peninsula Borough, Ketchikan Gateway Borough, City of Nome, City of Seward, City of Valdez (See Table 4, below).

**Table 4: FEMA Characteristics**

NFIP Participant	Hazard Mitigation Plan	HMP Year Approved	HMP Expiration	CTP Agreement	CTP Agreement Year	CRS Community
Municipality of Anchorage	App. Pending Adoption	2017	2022	Yes	1999	Yes
City of Aniak	Approved	12/8/2015	12/8/2020	No		Yes
City of Bethel	Expired	6/16/2008	6/16/2013	No		No
City of Cordova	Approved	8/22/2013	8/22/2018	No		No
City of Dillingham	Approved	9/20/2016	9/20/2021	No		No
City of Emmonak	Approved	11/20/2014	11/20/2019	No		No
Fairbanks North Star Borough	Approved	10/8/2014	10/8/2019	Yes	2004	No
City of Fort Yukon	Plan in Progress			No		No
City of Galena	Approved	3/14/2016	3/14/2021	No		No
Haines Borough	Awaiting Revisions			No		No
City of Homer	Expired	1/21/2010	1/21/2015	No		Yes
City of Hoonah	Expired	9/11/2012	9/11/2017	No		No
City and Borough of Juneau	Approved	7/23/2014	7/23/2019	Yes	2004	No
Kenai Peninsula Borough	Approved	1/11/2017	1/11/2022	No		Yes
Ketchikan Gateway Borough	Approved	12/29/2014	12/29/2019	No		Yes
City of Kotzebue	Expired	10/3/2008	10/3/2013	No		No
City of Koyukuk	Expired	2/23/2010	2/23/2015	No		No
City of Kwethluk	Approved	11/4/2015	11/4/2020	No		No
Lake and Peninsula	Approved	9/8/2015	9/8/2020	No		No
Matanuska-Susitna Borough	Approved	11/7/2013	11/7/2018	Yes		Yes
City of McGrath	Expired	2/26/2009	2/26/2014	No		No
City of Nenana	Expired	9/23/2010	9/23/2015	No		No
City of Nome	Approved	2/1/2017	2/1/2022	No		Yes
Northwest Arctic Borough	Expired	6/8/2009	6/8/2014	No		No
Petersburg Borough	Expired	6/2/2008	6/2/2013	No		No
City of Seward	Expired	7/14/2011	7/14/2016	No		Yes
City of Shishmaref	Approved	9/8/2015	9/8/2020	No		No
City and Borough of Sitka	Plan in Progress	2017-18	2022-23	No		No
Municipality of Skagway	Plan in Progress	2017-18	2022-23	No		No
City of Togiak	Expired	2/16/2010	2/16/2015	No		No
City of Valdez	Expired	6/27/2008	6/27/2013	No		Yes



Information on flooding and erosion data in Alaska’s communities is limited and oftentimes inaccurate. Floods have been recorded in more than half (56%) of NFIP-participating communities. In the past ten years, over half (53%) of NFIP communities have also experienced a federally declared disaster.

**Table 5. Flood and Erosion Characteristics**

NFIP Participant	Flood Recorded	Most Recent Flood Event	Flood of Record Year	Worst Flood Event Year	Flood Insurance Study	Flood Gauge	AK Baseline Erosion Assessment	2000-10 Fed Declared Disasters
Municipality of Anchorage	Yes	1986			Yes	No	Minimal Erosion	1
City of Aniak	Yes	1991		1971	Yes	Yes	Monitor Conditions	2
City of Bethel	Yes	1991		1988	Yes	No	Monitor Conditions	3
City of Cordova	Yes	1995			Yes	No	Priority Action	1
City of Dillingham	Yes	1980		1929	Yes	No	Priority Action	0
City of Emmonak	Yes	2009	1989	1972	Yes	Yes	Priority Action	3
Fairbanks Northstar		2008/09			DK	DK	Borough, Not rated	2
City of Fort Yukon	Yes	2009		1949	Yes	Yes	Monitor Conditions	1
City of Galena	Yes	2013	1971		Yes	No	Monitor Conditions	0
Haines Borough	Yes			1976	Yes	No	Monitor Conditions	0
City of Homer	Yes	1994	1966		Yes	No	Monitor Conditions	2
City of Hoonah	Yes	1992			Yes	No	No Erosion Issues	0
City and Borough of Juneau	Yes	1981			Yes	No	Minimal Erosion	0
Kenai Peninsula Borough	Yes	2014			DK	DK	Borough, Not rated	2
Ketchikan Gateway Borough					DK	DK	Borough, Not rated	0
City of Kotzebue	Yes	1990			Yes	No	Monitor Conditions	2
City of Koyukuk	Yes	1989	1963		No	No	Monitor Conditions	3
City of Kwethluk	Yes	2009	1972		No	Yes	Monitor Conditions	0
Lake and Peninsula					DK	DK	Borough, Not rated	0
Matanuska-Susitna	Yes	2013			DK	DK	Borough, Not rated	2
City of McGrath	Yes	1991	1972		No	No	Priority Action	1
City of Nenana	No		2008		Yes	No	Monitor Conditions	0
City of Nome	No				Yes	No	Monitor Conditions	0
Northwest Arctic Borough					DK	DK	Borough, Not rated	2
Petersburg Borough					Yes	No	No Erosion Issues	2
City of Seward	Yes	2014			Yes	No	Monitor Conditions	0
City of Shishmaref	Yes	1989	1973		No	No	Priority Action	2
City and Borough of Sitka					Yes	No	Minimal Erosion	2
Municipality of Skagway					Yes	No	Minimal Erosion	0
City of Togiak	Yes		1964		No	Yes	Minimal Erosion	0
City of Valdez					Yes	No	Monitor Conditions	1



## CAPACITY TO REGULATE LAND USE AND TO PARTICIPATE IN LAND USE PLANNING

Alaska's Constitution confers broad authority on its local governments. Unlike many states that have centralized planning departments that regulate land use, Alaska State Law requires that planning, platting and land use regulation is carried out by Alaska's incorporated municipalities: home rule, first and second class boroughs, unified municipalities, and first class and home rule cities outside of boroughs. All other classes of municipalities (second class cities) may, but are not required to, exercise these powers. If a second class city is located within the unorganized borough, it has the option but not the duty to exercise planning, platting, and land use regulation within the boundaries of the city. Ten Alaskan cities participating in the NFIP fit into this category.

Alaska's local government structure and the authority vested in those local governments is significant to the implementation of the NFIP, because the ability to regulate land use is necessary for participation in the NFIP. The unorganized borough is not a municipal corporation; thus the State of Alaska has no legal authority to mandate planning, platting and land use regulation in second class cities or in unincorporated communities in the unorganized borough. Second class cities in the unorganized borough have the option, not the duty, to address development in the floodplain. Because there is no legal basis for land use regulation in Alaska's unincorporated communities, there is no authority to implement any compliance with the NFIP standards. Consequently, only a portion of Alaska's communities are eligible to participate in the NFIP.

Although NFIP participants must have planning and zoning authority, not all actively regulate land use within their jurisdictional boundaries. Table 6 (next page) shows the level of planning capacity for Alaska's NFIP participant communities.

Emmonak, Fort Yukon, Koyukuk, Shishmaref, and Togiak do not actively regulate land use or participate in land use planning. Nine NFIP-participating communities report not having a planning and zoning commission: Aniak, Emmonak, Fort Yukon, Galena, Koyukuk, Kwethluk, Nenana, Shishmaref, and Togiak. The communities that are not actively engaged in land use planning are also not part of an organized borough; thus there is no regional entity regulating land use.

Fortunately, all NFIP communities are generally engaged in community planning as evidenced by having a community plan adopted; however, type and quantity of community plan widely vary. The majority (59%) of NFIP participants have a paid staff planner. Half (50%) also have in-house GIS capacity; however, no NFIP participants report having a paid cartographer.



**Table 6: NFIP Community Planning Capacity**

NFIP Participant	Planning & Zoning Powers	Planning & Zoning Commission	Zoning Map	Community Plan	# Community Plans	Comprehensive Plan	Land Use Plan	Planner	GIS Tech	Cartographer	GIS Capacity
Municipality of Anchorage	Yes	Yes	Yes	Yes	8	5	1	Yes	Yes	No	Yes
City of Aniak	Yes	No	DK	Yes	3	1		No	No	No	No
City of Bethel	Yes	Yes	Yes	Yes	8	3		Yes	Yes	No	No
City of Cordova	Yes	Yes	Yes	Yes	5	3		Yes	Yes	No	Yes
City of Dillingham	Yes	Yes	DK	Yes	10	7	2	Yes	Yes	No	No
City of Emmonak	No	No	No	Yes	2			Yes	Yes	No	No
Fairbanks North Star Borough	Yes	Yes	Yes	Yes	8	1	2	Yes	Yes	No	Yes
City of Fort Yukon	No	No	No	Yes	3	2		No	Yes	No	No
City of Galena	Yes	No	Yes	Yes	3	1		No	Yes	No	No
Haines Borough	Yes	Yes	Yes	Yes	4	2		Yes	Yes	No	Yes
City of Homer	Yes	Yes	Yes	Yes	8	3		Yes	Yes	No	No
City of Hoonah	Yes	Yes	DK	Yes	4	1	2	Yes	Yes	No	No
City and Borough of Juneau	Yes	Yes	Yes	Yes	13	3	4	Yes	Yes	No	Yes
Kenai Peninsula Borough	Yes	Yes	Yes	Yes	8	3		Yes	Yes	No	Yes
Ketchikan Gateway Borough	Yes	Yes	Yes	Yes	5	3		Yes	Yes	No	Yes
City of Kotzebue	Yes	Yes	DK	Yes	4	2		Yes	No	No	No
City of Koyukuk	No	No	No	Yes	2	1		Yes	No	No	No
City of Kwethluk	Yes	No	DK	Yes	3	1		Yes	No	No	No
Lake and Peninsula	Yes	Yes	Yes	Yes	5			Yes	Yes	No	Yes
Matanuska-Susitna	Yes	Yes	Yes	Yes	7	3		Yes	Yes	No	Yes
City of McGrath	Yes	Yes	DK	Yes	1			No	Yes	No	No
City of Nenana	Yes	No	DK	Yes	1	1		No	Yes	No	No
City of Nome	Yes	Yes	Yes	Yes	5	2		Yes	Yes	No	Yes
Northwest Arctic Borough	Yes	Yes	Yes	Yes	4	1		Yes	Yes	No	Yes
Petersburg Borough	Yes	Yes	Yes	Yes	7	2		Yes	Yes	No	Yes
City of Seward	No	No	Yes	Yes	3	2	1	No	Yes	No	Yes
City of Shishmaref	No	No	No	Yes	10			Yes	Yes	No	No
City and Borough of Sitka	Yes	Yes	Yes	Yes	16	3	3	Yes	Yes	No	Yes
Municipality of Skagway	Yes	Yes	Yes	Yes	9	2	4	No	No	No	Yes
City of Togiak	No	No	No	Yes	3			No	No	No	No
City of Valdez	Yes	Yes	Yes	Yes	1	1		Yes	Yes	No	Yes





## GIS Capabilities

GIS in-house capacity will enable Alaskan NFIP communities to participate in the new digital mapping program. GIS capacity includes trained staff as well as hardware and software and data that is available within a municipality. Of Alaska's 164 municipalities, only 19 have in-house GIS capacity. Sixteen of these communities participate in the NFIP:

**Table 7: GIS Capabilities of NFIP Communities**

Community	NFIP	Non-NFIP
City and Borough of Juneau	X	
City and Borough of Sitka	X	
Haines Borough	X	
Kenai Peninsula Borough	X	
Ketchikan Gateway Borough	X	
Kodiak Island Borough		X
Lake and Peninsula	X	
Matanuska-Susitna	X	
Municipality of Anchorage	X	
Municipality of Skagway	X	
North Slope Borough		X
Northwest Arctic Borough	X	
Fairbanks North Star Borough	X	
City of Cordova	X	
City of Nome	X	
Petersburg Borough	X	
City of Valdez	X	
City of Seward	X	
City of Delta Junction		X



### ALASKA FLOOD HAZARD MAPS

Flooding is responsible for millions of dollars of property damage each year. The State of Alaska averages approximately \$2.3 million per year in disaster costs for flood-related emergency costs. Most of the flooding that occurs in Alaska results from rainfall, snowmelt, and ice jams restricting stream channels and backing up flow; tsunamis, earthquakes, and coastal storms also cause flooding. Unique to Alaska, 750 glacier-dammed lakes have been identified causing concern regarding dam failure. If a glacier ice dam fails, lake water is released resulting in downstream flooding called outburst flooding. The rapid melting of snow during volcanic eruptions, tsunamis, and coastal storms can also cause unanticipated flooding (Miller, 2008).

Flood hazard maps produced by FEMA have been one of the primary tools for flood hazard planning for Alaska's city and borough governments, specifically those that participate in the NFIP. Alaska's local governments and the State of Alaska rely on FEMA flood hazard maps to regulate floodplain development and otherwise mitigate for flood losses. FEMA flood hazard maps currently serve 42 Alaska borough and city governments; three of these communities are mapped, but have been suspended from the NFIP. These communities have city governments that have failed to adopt ordinances to regulate development in the mapped flood hazard areas. The city of Delta Junction has also been mapped, but made the decision to withdraw from the NFIP in 2015.

Two cities and one borough are in the "Emergency Phase" of the NFIP and have no FEMA Flood Insurance Rate Maps (FIRM) or Flood Hazard Boundary Maps (FHBM). Unlike many other states where local governments with flood hazards have long been identified and mapped, Alaska has 122 incorporated city and borough governments that have no FEMA flood hazard maps. Furthermore, no ordinances exist to regulate floodplain development. These cities and boroughs do not have the availability of federal flood insurance and federally-backed financial assistance may be withheld, stymieing economic development opportunities. Many of these same communities are flood-prone resulting in costly state and federal disasters without the benefit of federal flood insurance. FIRMs are available through FEMA and are on the Web at the FEMA Map Service Center at: <https://msc.fema.gov/portal>

FIRMs are useful in a variety of ways to many persons and agencies. Private citizens and insurance brokers use the FIRM to locate properties and buildings in flood insurance risk areas. Community officials use the FIRM to administer floodplain management regulations and to mitigate flood damage. Lending institutions and federal agencies use the FIRM to locate properties and buildings in relation to mapped flood hazards, and to determine whether flood insurance is required when making loans or providing grants following a disaster for the purchase or construction of a building. FIRMS should be updated continuously but this costs time and money that often is hard to find. Some of Alaska's FIRMs are between 30 and 40 years old. The average age of Alaska's firms is 16 years; approximately one-third of the maps are over 20 years old. FEMA, the State of Alaska, and NFIP communities are working to update maps as resources allow. Since



2011, 16 Alaskan cities and boroughs have been engaged in new Risk MAP studies; 9 of these have resulted in new FIRMs. These studies are discussed in more detail in the next section, *Current Alaska Risk MAP Studies*, beginning on page 43.

DCRA, as the designated State-Coordinating Agency for the NFIP, has historically assumed responsibility for the floodplain mapping program as well as producing community profile maps for smaller communities that include best available flood and erosion information. Since 2009, DCRA has also assumed responsibility for providing digital flood hazard maps to FEMA for new communities entering the NFIP. The work has largely been completed via community profile map contractors.

As illustrated by Table 8 on page 42, three NFIP-participating communities do not have a FIRM: the Cities of Koyukuk and Kwethluk, and the Northwest Arctic Borough (with the exception of the City of Kotzebue, which participates in the National Flood Insurance Program on its own). Of those NFIP participants with FIRMS, the number of panels range from 1 (Cordova, McGrath, and Nenana) to 184 (Matanuska-Susitna Borough). The number of maps with Letters of Map Change (LOMC) range from zero to 253 (Fairbanks North Star Borough). Firm map age ranges from one year to 40 years old (Skagway).

### *Letters of Map Change (LOMC)*

A LOMC is a letter which reflects an official revision to an effective FIRM. LOMCs are issued in place of the physical revision and republication of the effective map. The number of LOMCs submitted can indicate that a FIRM may need revision. The final column of Table 8 on the following page shows the number of FIRM panels with LOMCs submitted by NFIP-participating community.



**Table 8: Flood Insurance Rate Maps (FIRMS)**

Community Name	FIRM	Effective FIRM Panels	Initial FIRM Date	Preliminary Panels	Most Recent Effective FIRM Age (Years)	FIRM Effective Date	FIRM Panels w/ LOMCs
Municipality of Anchorage	Yes	94	5-Sep-79		8	25-Sep-09	20
City of Aniak	Yes	6	5-Sep-78		11	29-Sep-06	0
City of Bethel	Yes	8	28-Jun-74		8	25-Sep-09	1
City of Cordova	Yes	17	24-May-77	57	2	16-Dec-15	2
City of Delta Junction	Yes	2	25-Oct-77		35	16-Sep-82	2
City of Dillingham	Yes	5	31-May-74		35	30-Sep-82	0
City of Emmonak	Yes	4	21-Sep-98		8	25-Sep-09	0
Fairbanks North Star Borough	Yes	103	25-Jun-69		3	17-Mar-14	253
City of Fort Yukon	Yes	8	3-Feb-10		7	3-Feb-10	0
City of Galena	Yes	6	12-Oct-82		33	1-Mar-84	0
Haines Borough	Yes	2	31-May-74		30	1-May-87	0
City of Homer	Yes	12	19-May-81		1	20-Oct-16	1
City of Hoonah	Yes	3	7-Jun-74		7	4-Jun-10	0
City and Borough of Juneau	Yes	65	9-May-70	24	3	19-Aug-13	101
Kenai Peninsula Borough	Yes	73	127-Sep-13		1	20-Oct-16	19
Ketchikan Gateway Borough	Yes	3	9-May-78	20	27	16-Apr-90	10
City of Kotzebue	Yes	3	21-Jun-74		34	18-Jul-83	0
City of Koyukuk	No	-	-	-	-	--	-
City of Kwethluk	No	-	-	-	-	-	-
Lake and Peninsula Borough	Yes	5	3-Feb-10		7	3-Feb-10	0
Matanuska-Susitna Borough	Yes	184	28-Feb-78	125	6	17-Mar-11	199
City of McGrath	Yes	2	4-Oct-11		6	4-Oct-11	0
City of Nenana	Yes	1	9-Jun-72		18	4-Apr-99	2
City of Nome	Yes	8	28-Jun-74		7	3-May-10	0
Northwest Arctic Borough	No	-	-	-	-	-	-
Petersburg Borough	Yes	6	14-Jun-74		35	1-Jun-82	11
City of Seward	Yes	15	27-Sep-13		1	20-Oct-16	0
City of Shishmaref	Yes	4	23-Aug-01		7	3-May-10	0
City and Borough of Sitka	Yes	46	28-Jun-74	17	27	29-Nov-10	14
Municipality of Skagway	Yes	1	1-Mar-77		40	1-Mar-77	0
City of Togiak	Yes	6	3-Feb-10		7	3-Feb-10	0
City of Valdez	Yes	45	1-Nov-74	57	34	1-Dec-83	2
<i>Current as of September 2017</i>							



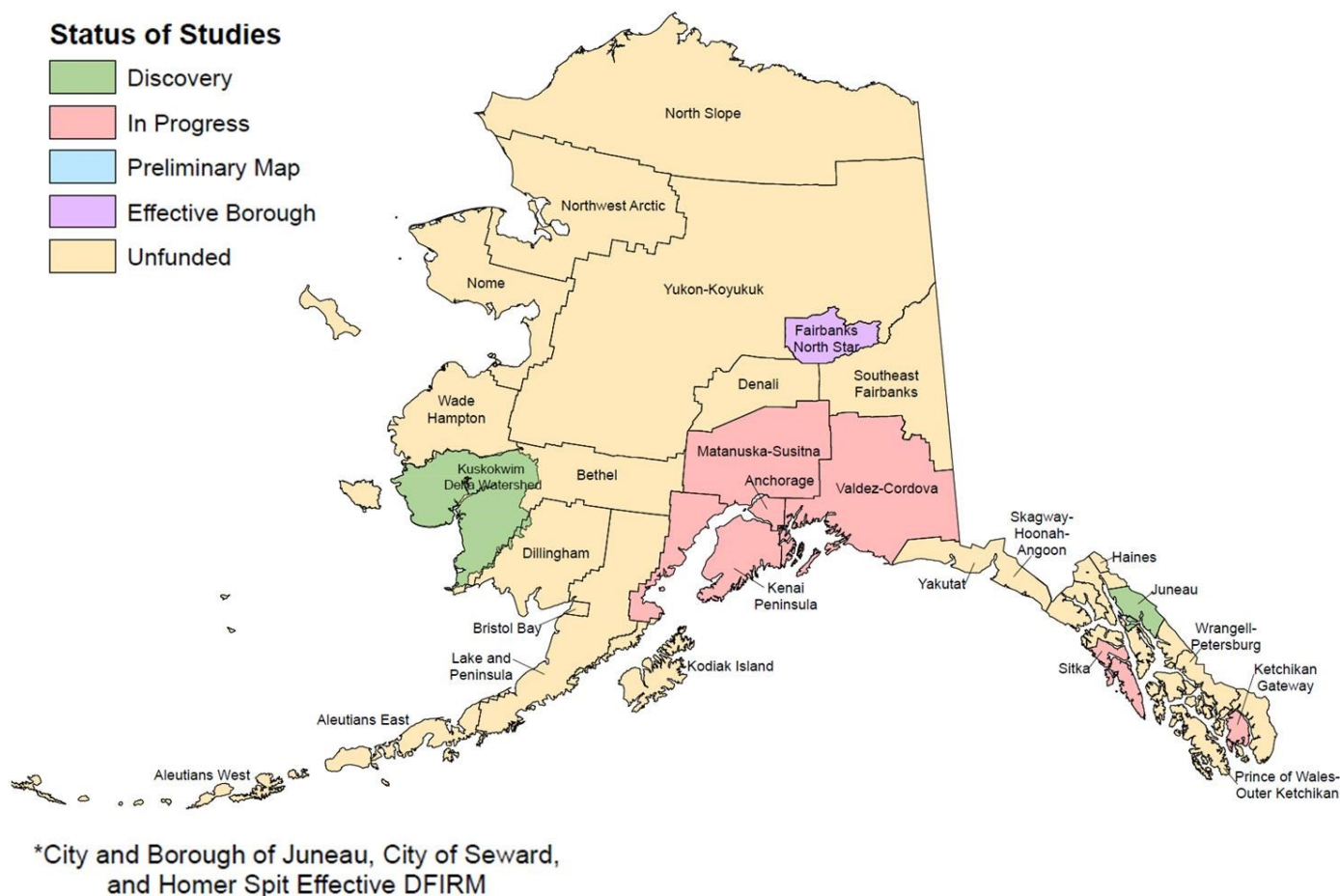
## CURRENT ALASKA RISK MAP STUDIES

As of September 2017, sixteen local governments have been recipients of Risk MAP studies which are underway or recently completed. Four of these local governments were studies were also involved with studies begun under the Map Modernization Program. The studies range from LiDAR acquisition to physical map revisions.

From October 2016 to September 2017, the State of Alaska, FEMA, and FEMA's mapping contractor conducted Risk MAP meetings with the Matanuska-Susitna Borough, Municipality of Anchorage, City and Borough of Sitka, Kenai Peninsula Borough, Ketchikan Gateway Borough, City and Borough of Juneau, and the City of Valdez. The map below illustrates the status of current and planned mapping studies in the state.

Summaries of current and completed Risk MAP projects in Alaska begin on page 44.

**Figure 17: Current and Planned Alaska Risk MAP Studies**







### *Municipality of Anchorage*

FEMA and the State of Alaska are conducting a Risk MAP Study in the Municipality of Anchorage (MoA) that began in 2013. The following non-regulatory activities have been conducted:

#### **Study Scope**

##### **Seismic Hazus Run and Analysis**

As a part of preparation for the Alaska Shield Exercise in 2014, FEMA Region X collected building stock and infrastructure data from MoA which has been formatted for use in Hazus (UDF database). FEMA will work with MoA to develop the Hazus UDF database with any available updated local information and will update the Advanced Engineering Building Module (AEBM) specific to the MoA. MoA will also provide FEMA the T-154 assessment where bridges of concern were identified. Additionally, DHS&EM will provide updated fire station and school retrofit data for the MoA.

FEMA, MoA, the Alaska Division of Geological and Geophysical Survey (DGGS), and the University of Alaska Fairbanks Alaska Earthquake Center (AEC) will work together to develop a risk assessment for the below three earthquake scenarios (ShakeMaps will be updated by AEC and posted to the Alaska archive of scenario ShakeMaps):

1. M7.5 Castle Mountain Scenario
2. M7.2 Intraplate Scenario
3. M7.1 Border Ranges Fault

##### **Avalanche Vulnerability Assessment and Implementation Examples**

MoA has an existing analysis of avalanche risk (Arthur Mirrors Report, and Mass Wasting Geotechnical Report); however a more detailed analysis is desired using updated topographic, infrastructure and essential facility information. MoA will provide FEMA existing reports and available GIS data. DGGS may be able to provide additional information and analysis. Collected data will be used to conduct a vulnerability assessment for avalanche hazards using the UDF building and facility information developed during the Hazus earthquake process. FEMA will complete a vulnerability assessment using MoA provided data and recommend mitigation strategies based on results. Vulnerable infrastructure and essential facilities will be identified based on results from the GIS-based assessment. Areas of Mitigation Interest (AOMI) will be developed in coordination with MoA.

Additionally, FEMA will provide information about assessments and methodologies used by other communities.

##### **Dam Failure Vulnerability Assessment**

FEMA, MoA, and the State will coordinate with the AK State Dam Safety Office (DNR) to obtain available inundation information for the ten dams impacting the Anchorage Area (Eklutna, Lake o' the Hills Dam, Lower Fire Lake, Campbell Lake, Westchester Lagoon, Lower Eklutna, Ship Creek, Gregory



Lake, Otter Lake, and Explorer Glacier Pond). MoA and the State will provide FEMA available inundation information and GIS data. Collected data will be used to conduct a vulnerability assessment for dam failures using the UDF building and facility information developed during the Hazus earthquake process. FEMA will complete a vulnerability assessment using MoA provided data and recommend mitigation strategies based on results. Vulnerable infrastructure and essential facilities will be identified based on results from the GIS-based assessment. Areas of Mitigation Interest (AOMI) will be developed in coordination with MoA.

### **Landslide Vulnerability Assessment**

MoA has an existing analysis of landslide risk (Mass Wasting Geotechnical Report and 1979 Harding Report); however a more detailed analysis is desired. MoA will provide FEMA existing reports and GIS data. DGGS may be able to provide additional information and analysis. Collected data will be used to conduct a vulnerability assessment for landslide hazards using the UDF building and facility information developed during the Hazus earthquake process. FEMA will complete a vulnerability assessment using MoA provided data and recommend mitigation strategies based on results. Vulnerable infrastructure and essential facilities will be identified based on results from the GIS-based assessment. Areas of Mitigation Interest (AOMI) will be developed in coordination with MoA.

### **Wildfire Vulnerability Assessment**

MoA has an existing analysis of wildfire risk (Wildland Urban Interface Areas (WUI) and the Community Wildfire Protection Plan (CWPP)); however a more detailed analysis is desired using updated infrastructure and essential facility information. MoA will provide FEMA existing reports and available GIS data. Collected data will be used to conduct a vulnerability assessment for wildfire hazards using the UDF building and facility information developed during the Hazus earthquake process. FEMA will complete a vulnerability assessment using MoA provided data and recommend mitigation strategies based on results. Vulnerable infrastructure and essential facilities will be identified based on results from the GIS-based assessment. Areas of Mitigation Interest (AOMI) will be developed in coordination with MoA.

### **Wind Vulnerability Assessment**

MoA has a report on wind hazards in the Anchorage area. MoA will provide this report and any available GIS data to FEMA. DGGS may be able to provide additional information and analysis. FEMA will contact the National Weather Service to obtain updated information if available. Collected data will be used to conduct a vulnerability assessment for wind hazards using "Three Second Gusts" (not miles per hour) and the UDF building and facility information developed during the Hazus earthquake process. FEMA will complete a vulnerability assessment using collected data and will recommend mitigation strategies based on results. Vulnerable infrastructure and essential facilities will be identified based on results from the GIS-based assessment. Areas of Mitigation Interest (AOMI) will be developed in coordination with MoA.

### **Risk Report**

FEMA, in coordination with MoA, has developed a draft non-regulatory Risk Report which includes narratives on the above hazards and risk exposure, and explains the risk assessment methodology and results for MoA. The Risk Report provides loss estimations using Hazus for earthquake hazards. Avalanche, dam failure, landslide, wildfire, and wind will include a summary and vulnerability analysis.



Areas of Mitigation Interest (AOMI) will be identified for each hazard described above. Results and AOMI will be presented to MoA at an in-person Resilience Workshop, expected to be held the summer of 2016. During the Resilience Workshop, FEMA, the State, and Subject Matter Experts will work with MoA to identify actionable mitigation strategies for the top priority AOMI. MoA is encouraged to link the Resilience Workshop and completed risk assessment products into its ongoing Hazard Mitigation Plan update process.

In addition to the Risk Report, all supporting GIS data will be combined into a risk database. FEMA and the State will provide technical assistance throughout the project and upon delivery of the final database.

### Flood Study Priorities

Flood study needs and priorities for the flood sources impacting MOA will be documented in a report that FEMA can use as funding becomes available for additional riverine flood insurance studies. The report will address the following topics:

1. Vertical Datum – document the steps needed for MOA to transition to the use of NAVD88 and any outside assistance needed to make the transition.
2. LiDAR – document existing LiDAR and other topographic data, including details on data quality, and determine areas where future LiDAR acquisition is desired.
3. Re-delineation – document issues with previous re-delineations of Special Flood hazard Areas.
4. New Flood Studies – document flooding sources in MOA and prioritize areas for new flood insurance studies.
5. Levee Policy – document levees in MOA and the impact on flood studies based on FEMA’s Levee Policy.

### Outstanding/Pending Flood Studies

In addition to the new Risk MAP study discussed above, there are two outstanding/pending flood studies in the MOA:

- A Physical Map Revision incorporating new studies for Furrow and Girdwood Creeks in 2006. This project is a legacy Map Mod project which is currently on hold due to the change in FEMA’s levee policy. The new levee analysis and mapping approach FEMA has developed is currently in the 45-day “Public Review and Comment” Period which started on December 15, 2011.

Under the Risk MAP Program, FEMA commenced a Physical Map Revision/LiDAR Acquisition project comprised of a mix of detailed studies and redelineations, including a detailed study of Eagle River and re-delineation of Girdwood flooding sources and of Little Campbell Creek. This project has been suspended due to numerous concerns the Municipality had with technical and procedural aspects of the project, including the vertical datum and the scope of the project study. FEMA plans to continue the project once these concerns are addressed and resolved.

In addition to the new Risk MAP study discussed above, there are two outstanding/pending flood studies in



the MOA:

- A Physical Map Revision incorporating new studies for Furrow and Girdwood Creeks in 2006. This project is a legacy Map Mod project which is currently on hold due to the change in FEMA's levee policy.  
The new levee analysis and mapping approach FEMA has developed is currently in the 45-day "Public Review and Comment" Period which started on December 15, 2011.
- Under the Risk MAP Program, FEMA commenced a Physical Map Revision/LiDAR Acquisition project comprised of a mix of detailed studies and redelineations, including a detailed study of Eagle River and re-delineation of Girdwood flooding sources and of Little Campbell Creek. This project has been suspended due to numerous concerns the Municipality had with technical and procedural aspects of the project, including the vertical datum and the scope of the project study. FEMA plans to continue the project once these concerns are addressed and resolved.

**Figure 18: Damage following 2013 Anchorage wind storm**







### *City of Aniak*

The Risk MAP process began for the City of Aniak on October 30, 2015 when the State and FEMA conducted a Risk MAP Interview. During the interview, Aniak officials were asked to identify persistent flood problems and other hazard areas of concern, which will be discussed in more detail during the Discovery Meeting.

The Alaska State Risk MAP Coordinator, FEMA's Risk Analyst and the Alaska State Mitigation Planner travelled to Aniak on July 27, 2016 to conduct a Risk MAP Discovery Meeting with City of Aniak leadership and staff. We discussed the purpose of the Risk MAP Program and how it could benefit the City of Aniak. Aniak's Local Hazard Mitigation Plan (LHMP) was completed in 2015, so the next update will be in 2020. FEMA and the State discussed how the Risk MAP process could inform the next update of the LHMP. City staff identified flood, fire and erosion hazards on a map. This information was developed into a Discovery map, which accompanied the Discovery report, presented to the community in January 2017.

**Figure 19: Flooding in the Village of Aniak**







### *City of Bethel*

The Risk MAP process began for the City of Bethel on May 27, 2015 when the State and FEMA conducted a Risk MAP Interview. During the interview, Bethel officials identified persistent flood problems and other hazard areas of concern, which will be discussed in more detail during the Discovery Meeting.

The Alaska State Risk MAP Coordinator, FEMA's Risk Analyst and the Alaska State Mitigation Planner travelled to Bethel on June 15, 2016 to conduct a Risk MAP Discovery Meeting with City of Bethel staff and community members. The State and FEMA discussed the purpose of the Risk MAP Program and how it could benefit the City of Bethel. Bethel's Local Hazard Mitigation Plan (LHMP) was completed in 2008, so the plan has expired. The City is considering an update to the plan in the near future. FEMA and the State discussed how the Risk MAP process could inform the next update of the LHMP. The community identified flood, fire, permafrost and erosion hazards on a map. This information was developed into a Discovery map, which accompanied the Discovery report, presented to the community in January 2017.

**Figure 20: Bethel, Alaska, July 2016**





### *City of Cordova*

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the City of Cordova that began in 2011.

### **Study Scope**

The scope of work of the City of Cordova Risk MAP Study includes (see also the map on page 40)

- The mapping of approximately 9.7 miles of shoreline utilizing the new storm surge modeling (coastal hydrology) and overland wave height analysis (coastal hydraulics), as well as floodplain boundaries for 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. Updated areas include approximately 4.5 miles of Eyak Lake, 1 mile of Eyak River using detailed study analysis, 1.2 miles of Ibek River using approximate study analysis, and 1.0 miles of Shaded Zone X on Fleming Creek, Creek No. 1, and Creek No. 2 using approximate study analysis.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's were released on August 25, 2014.
- All of the above datasets will be in the in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.
- Utilizing existing tsunami inundation maps, and evacuation maps, tsunami-focused public outreach materials were developed for the City of Cordova, to be utilized during the July 15th Copper River Salmon Festival in Cordova, including the following tasks:
  - o Develop a document that incorporates existing tsunami inundation maps for Cordova with existing tsunami evacuation routes in a format repeatable by the AK DHS&EM for use in other tsunami prone communities
  - o Develop tsunami outreach and preparedness messaging and add to the evacuation/inundation maps that can be utilized throughout the State of Alaska in future tsunami outreach materials
  - o Provide a template for future tsunami inundation and evacuation mapping with messaging for future Alaska mapping efforts
  - o Printed tsunami inundation and tsunami evacuation maps and messaging will be provided by

**AK DHS&EM**

- o Assistance with planning and implementation of a tsunami outreach event in coordination with the Copper River Salmon Festival to be held July 15th, 2017.
- o Alaska's Division of Homeland Security and Emergency Management will provide the Quake simulator for use during the Copper River Salmon Festival on July 15th, 2017.

**Cordova Project Status**

The flood study has concluded and the FIRMs and FIS became effective on December 16, 2015. Once all risk assessments are completed, FEMA will compile them into a multi-hazard Risk MAP Risk Report, which will include a risk assessment of flood, earthquake, and tsunami hazards.

A Resilience Workshop Webinar was held with the City of Cordova on February 22, 2016 to discuss the results and risk reduction strategies. A follow-up meeting was held March 18, 2016. The table on the following page illustrates project status and includes major milestones with dates.



**Table 9: Cordova Project Status**

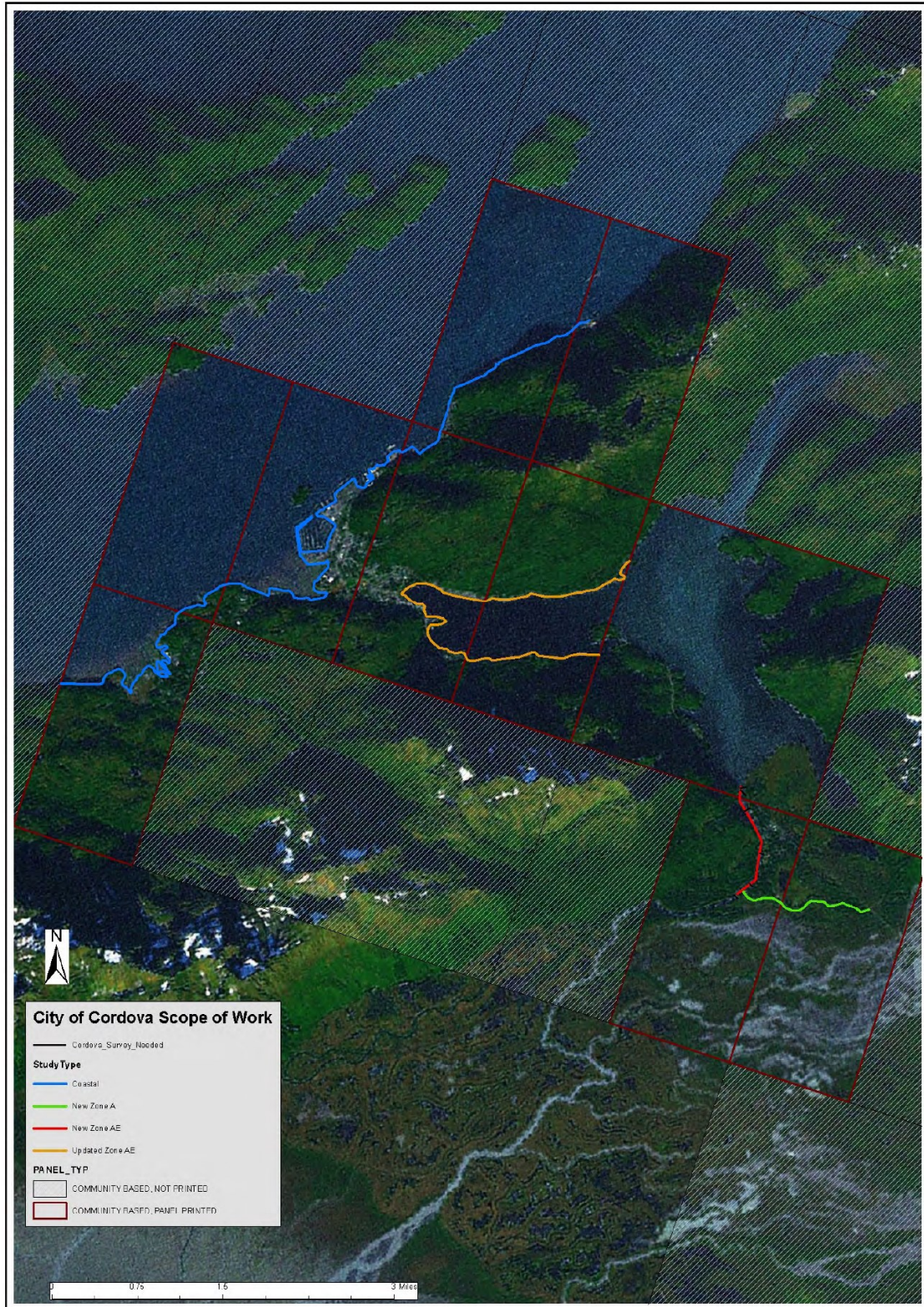
Activity	Actual or Projected End Date
Cordova Discovery Interview	February 11, 2011
Cordova Discovery Meeting	March 4, 2011
Base Map Acquisition	Spring 2011
Discovery Report	May 2011
Perform Field Survey/Develop Topographic Data	Summer 2013
Perform Coastal Analysis/Hydraulic Analysis	January 2014
Perform Floodplain Mapping/Develop DFIRM Database	Spring 2014
Draft Work Maps Issued	March 14, 2014
Flood Risk Review Meeting	June 25, 2012
Preliminary DFIRM/FIS Released	August 25, 2014
Consultation Coordination Officers (CCO) Meeting	September 23, 2014
Public Meeting/Workshop	September 23, 2014
Revised Preliminary DFIRM/FIS Release	October 31, 2014
90-Day Appeal Period Start Date	January 2, 2015
90-Day Appeal Period End Date	April 4, 2015
Letter of Final Determination Issued	June 16, 2015
DFIRM/FIS Effective Date	December 16, 2015
Draft Multi-Hazard Risk Report	Winter 2016
Risk MAP Resilience Webinar	February 22, 2016
Flood Risk Datasets (CSLF, depth grids)	February 23, 2016
Delivery of Final Risk report and Risk Assessment Database	Winter 2016

\*All projected dates are subject to revision as the project progresses





**Figure 21: Map of Cordova Project Scope**







### *City of Emmonak*

The Risk MAP process began for the City of Emmonak on May 28, 2015 when the State and FEMA conducted a Risk MAP Interview. During the interview, Emmonak officials identified persistent flood problems and other hazard areas of concern, which will be discussed in more detail during the Discovery Meeting.

The Alaska State Risk MAP Coordinator, FEMA's Risk Analyst and the Alaska State Mitigation Planner travelled to Emmonak on June 16, 2015 to conduct a Risk MAP Discovery Meeting with City of Emmonak leadership and community members. The State and FEMA discussed the purpose of the Risk MAP Program and how it could benefit the City of Emmonak. Bethel's Local Hazard Mitigation Plan (LHMP) was completed in 2008, so the plan has expired. The City is considering an update to the plan in the near future. FEMA and the State discussed how the Risk MAP process could inform the next update of the LHMP. The community identified flood, fire and erosion hazards on a map. This information was developed into a Discovery map, which accompanied a Discovery report, presented to the community on September 9, 2015.

### **Channel Migration Project**

As part of Emmonak's Risk MAP study, FEMA funded the Alaska Division of Geological and Geophysical Surveys to conduct a channel migration study at Emmonak. The study work plan includes the following tasks:

- Seeking out other available remote sensing products
- Converting data to a similar format
- Delineating channels
- Computing rates of channel change
- Projecting future channel positions
- Reporting on the channel migration hazard

The table on the following page illustrates project status and includes major milestones with dates.

**Table 10: City of Emmonak Project Status**

Activity	Actual or Projected End Date
Discovery Meeting	June 16, 2015
Discovery Report distributed	September 2015
LiDAR collected	August 30, 2016 - June 30, 2017
Channel Migration Assessment	September 2017*

*\*All projected dates are subject to revision as the project progresses*

**Figure 22: Debris from flood on Emmonak dump service road, July 15, 2013**



### ***Fairbanks North Star Borough***

#### **2006-2014 Legacy Map Modernization Study**

In 2014, FEMA completed a legacy Map Modernization study begun in 2006 to re-study some of the map panels in the Fairbanks North Star Borough FIRM.

The scope of the project included detailed study of the Chena River from its mouth to Moose Creek Dam, Noyes Slough, and the Little Chena River from its confluence with Chena River to 10,800 feet upstream of Chena Hot Springs Road. This study also includes the flood-prone areas along the Tanana River and the Chena Slough that are unchanged from the August 1982 edition of the Flood Insurance Rate Map. Earlier studies on the Chena and Little Chena rivers were approximations of flood potentials derived from aerial photography during actual flooding events. This study was an integral part of a U.S. Army Corps of Engineers Environmental Assessment on the Chena River Lakes Flood Control Project which concluded that the congressionally authorized maximum flow release in downtown Fairbanks of 12,000 cubic feet per second (cfs) should not be changed. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

The revised flood hazard determinations and FIRM map panels became effective on March 17, 2014,

#### **2016-2017 Chena Slough Flood Study**

In 2014, when the Fairbanks North Star Borough's effective Flood Insurance Study (discussed above) was being completed, the Borough identified an updated flood study for Chena Slough as a local mapping need. FEMA was unable to include an updated flood study for Chena Slough at that time. Since then, the Borough hired a mapping contractor with Cooperating Technical Partnership (CTP) funding and has completed an updated flood study for Chena Slough through the Cooperating Technical Partners. FEMA's mapping contractor has been scoped to perform Quality Assurance/Quality Control (QA/QC) of this flood study, and to incorporate the updated study data into Preliminary Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) for public release and review.

Over the past year, FEMA's mapping contractor performed QA/QC of the Hydrology Mapping Information Platform (MIP) deliverable data, provided comments to the Borough and uploaded this data to FEMA's MIP website on April 27, 2017. On June 2, 2017, FEMA's mapping contractor completed QA/QC of the Hydraulics MIP deliverable data, provided comments to the Borough, and uploaded the data to FEMA's MIP website.

The table on the following page illustrates project status and includes major milestones with dates:

**Table 11: Fairbanks North Star Borough Project Status**

Activity	Actual or Projected End Date
Flood Study Kick-Off Meeting	November 23, 2016
Preliminary DFIRM/FIS Release	April 2018*
Consultation Coordination Officers (CCO) Meeting	Spring/Summer 2018*
Public Meeting/Workshop	Summer 2018*
90-Day Appeal Period Starts	Fall/Winter 2018*
90-Day Appeal Period Ends	Winter 2018/2019*
Letter of Final Determination (LFD)	Spring 2019*
Maps and FIS become Effective	Fall/Winter 2019*

*\*All projected dates are subject to revision as the project progresses*



### *City of Homer*

In Early February 2011, FEMA initiated a Coastal Physical Map Revision study to update the DFIRM for the Homer Spit. This project included 8 miles of revised coastal hazard analysis that included collection of storm surge data (coastal hydrology) and the analysis of overland wave height (coastal hydraulics), in addition to computing wave run-up. The new Flood Insurance Rate Maps (FIRMs) became effective November 6, 2013.

The Homer coastal area was also part of Coastal Physical Map Revision of the Kenai Peninsula Borough (see study area identified on the map on page 54).

### **Coastal Study Scope**

Specific to the City of Homer, the scope of work of the Kenai Peninsula Borough Risk MAP Study included:

- A detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics) near Beluga Lake and Beluga Slough
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in Winter/Spring 2016.
- All of the above datasets will be in the in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.





### Status of Homer Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held March 2, 2011 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the City of Homer. After the Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

The flood study has since been completed and the new Flood Insurance Study and Flood Insurance Rate Maps became effective on October 20, 2016.

FEMA developed a multi-hazard Risk Report for the Kenai Peninsula Borough as part of the ongoing Risk MAP study. Risk assessments have been completed for tsunami, dam failure, erosion, and flood hazards and have been compiled into a draft Risk Report. The State Risk MAP Coordinator sent the Risk Report out for review on October 6, 2016 and requested comments back by October 28, 2016.

On August 14, 2017, FEMA and the State held a webinar to review the data and results of the Risk Report.

Following this, the State and FEMA conducted a Resilience Workshop in the City of Homer on August 24, 2017. During the Resilience Workshop, community resilience needs, priorities and priority actions were identified. State and federal partners will address the priority actions and apprise local residents of accomplishments.

The table on the next page illustrates project status and includes major milestones with dates:



**Table 12: Homer Project Status**

Activity	Actual or Projected End Date
Homer Discovery Interview	January 25, 2011
Homer Discovery Meeting	March 2, 2011
Discovery Report	May 2011
Flood Study Kick-Off Meeting	July 23-26, 2012
Draft Maps Released/ Flood Risk Review Meeting	August 27-28, 2013
Preliminary DFIRM/FIS Release	June 13, 2014
Consultation Coordination Officers (CCO) Meeting	September 9-11, 2014
Public Meeting/Workshop	September 9-11, 2014
90-day Appeal Period Start Date	1st: January 28, 2015; 2nd: August 12, 2015
90-day Appeal Period End Date	1st: April 28, 2015; 2nd: November 10, 2015
Letter of Final Determination Issued	April 20, 2016
Draft Multi-Hazard Risk Report	October 6, 2016
Maps and FIS Become Effective	October 20, 2016
Risk MAP Resilience Workshop	August 22-24, 2017
Delivery of Final Risk Report and Risk Assessment Database	Fall /Winter 2017



### *City and Borough of Juneau*

In 2013, a legacy Map Modernization study was completed to develop DFIRMs for coastal and riverine areas within the City and Borough of Juneau (CBJ). These maps became effective August 19, 2013.

FEMA and the State of Alaska are currently conducting a Risk MAP Study in the CBJ that began in late 2013.

### **Project Scope**

The table below outlines the engineering work scoped for the City and Borough of Juneau.

**Table 13: Juneau Project Scope**

Stream Name	Riverine or Coastal	Modeling Type (ZONE)	Stream Length
Duck Creek	Riverine	Detailed (Zone AE)	3 miles
Lemon Creek	Riverine	Detailed (Zone AE)	2 miles
Jordan Creek	Riverine	Detailed (Zone AE)	3 miles
Unnamed Tributary to Duck Creek	Riverine	Detailed (Zone AE)	0.25 miles
East Fork Duck Creek	Riverine	Detailed (Zone AE)	1 mile
Gold Creek	Riverine	Approximate with structures (Zone A)	2 miles
Auke Lake	Riverine	Approximate with structures (Zone A)	1 mile
Auke Bay	Coastal	Detailed Redelineation (Zone VE)	15 miles
Douglas Harbor	Coastal	Detailed Redelineation (Zone VE)	4 miles
Tee Harbor	Coastal	New Coastal Study (Zone V or VE)	3 miles

The map on page 64 illustrates the project scope locations.



### Status of City and Borough of Juneau Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held September 26, 2013, where community hazard concerns were identified. Additional areas of concern were provided via email on February 20, 2014. These concerns were captured in the Risk MAP Discovery Report and delivered to CBJ. After Discovery, community concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

Draft workmaps were released to the CBJ on May 18, 2016. A Flood Risk Review (FRR) meeting was held on Tuesday, August 30, 2016, at the CBJ Community Development Department, 155 South Seward Street, Juneau, AK 99801. The FRR meeting provides an opportunity for local government officials to discuss the draft workmaps and the methodologies that were utilized in their production with representatives from FEMA, STARR, and the State of Alaska. The draft workmaps are an early product of approximate and detailed hydraulic modeling and draft flood hazard as well as analyses and/or re-mapping of the coastal flood hazard boundaries for Auke Bay and Douglas Harbor.

FEMA's mapping contractor is working on preliminary production with the distribution of a preliminary Flood Insurance Study and Preliminary Flood Insurance Rate Maps projected for late August 2017.

A multi-hazard Risk Report is being developed for the Juneau area as part of the ongoing Risk MAP study. The Risk Report will include a risk assessment of avalanche, earthquake, flooding, landslide, tsunami, volcano ash fall, and wildfire. Hazus, FEMA's loss estimation software, will be used to assess earthquake and flood hazards. Once all risk assessments are completed, they will be compiled into the Risk MAP Risk Report and a Resilience Workshop will be held to discuss the results and risk reduction strategies. The Resilience Workshop is expected to take place in the summer of 2018.

The table on the following page illustrates project status and includes major milestones with dates.

**Table 14: Juneau Project Status**

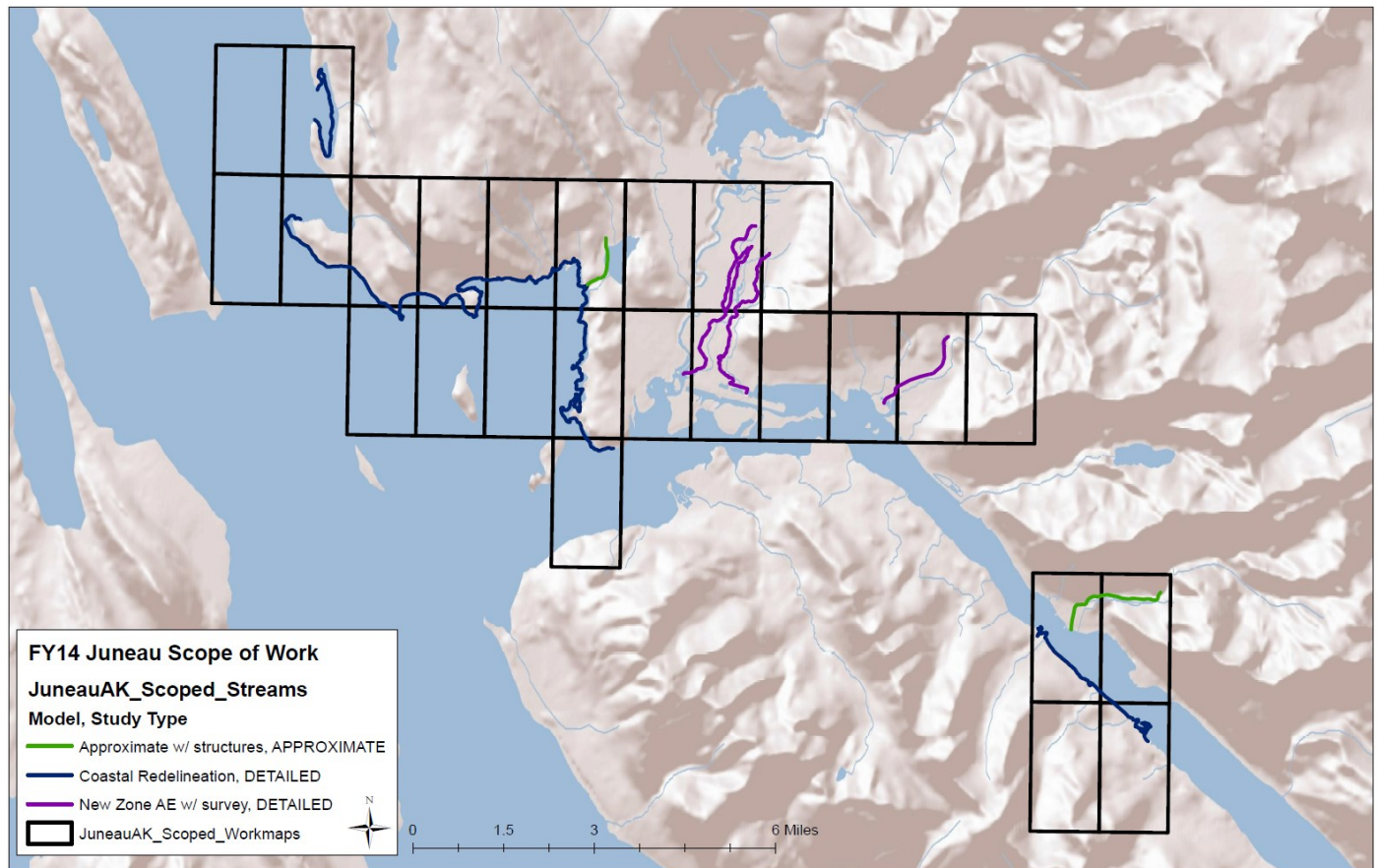
Activity	Actual or Projected End Date
City and Borough of Juneau Discovery Interview	January 26-28, 2011
City and Borough of Juneau Discovery Meeting	September 26, 2013
Flood Study Kick-Off Call	August 17, 2016
Draft Workmap Release	May 18, 2016
Flood Risk Review Meeting	August 30, 2016
Preliminary DFIRM/FIS Release	August 25, 2017*
Consultation Coordination Officers (CCO) Meeting	September/October 2017*
Public Meeting/Workshop	November/December 2017*
Appeal Period Starts	February/March 2018*
Appeal Period Ends	May/June 2018*
Letter of Final Determination	October/November 2018*
Draft Multi-Hazard Risk Report	Spring 2018*
Risk MAP Resilience Workshop	Spring/Summer 2018*
Delivery of Final Risk Report and Risk Assessment Database	Fall 2018*
Maps and FIS become Effective	April/May 2019*

*\*All projected dates are subject to revision as the project progresses*





**Figure 23: Map of City and Borough of Juneau Risk MAP Study Scope**





## ***Kenai Peninsula Borough***

FEMA and the State of Alaska have finalized a coastal Risk MAP Study in the Kenai Peninsula Borough that began in 2011.

### **Scope of Work**

The scope of work of the Kenai Peninsula Borough Risk MAP Study includes (see also the map on page 45):

- 28 miles of detailed coastal studies, as well 15 miles of riverine studies in the following locations:
  - ◊ Cooper Creek – 8 miles of detailed study
  - ◊ Ninilchik – 2 miles of detailed study
  - ◊ Anchor Point – 5 miles of detailed study
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages.
- LiDAR data was collected in 2011 and delivered to the community.
- All of the above datasets will be in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.



### Status of Kenai Peninsula Borough Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held March 2, 2011 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the communities in the Borough. After the Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

The flood study has since been completed and the new Flood Insurance Study and Flood Insurance Rate Maps became effective on October 20, 2016.

FEMA developed a multi-hazard Risk Report for the Kenai Peninsula Borough as part of the ongoing Risk MAP study. Risk assessments have been completed for tsunamis, dam failure, erosion, and flood hazards and have been compiled into a draft Risk Report. The State Risk MAP Coordinator sent the Risk Report out for review on October 6, 2016 and requested comments back by October 28, 2016.

On August 14, 2017, FEMA and the State held a webinar to review the data and results of the Risk Report. Following this, the State and FEMA conducted three Resilience Workshops in the Borough on August 22, 23, and 24, 2017. During the Resilience Workshops, community resilience needs, priorities and priority actions were identified. State and federal partners will address the priority actions and apprise local residents of accomplishments.

The table on the next page illustrates project status and includes major milestones with dates:

**Table 15: Kenai Peninsula Borough Project Status**

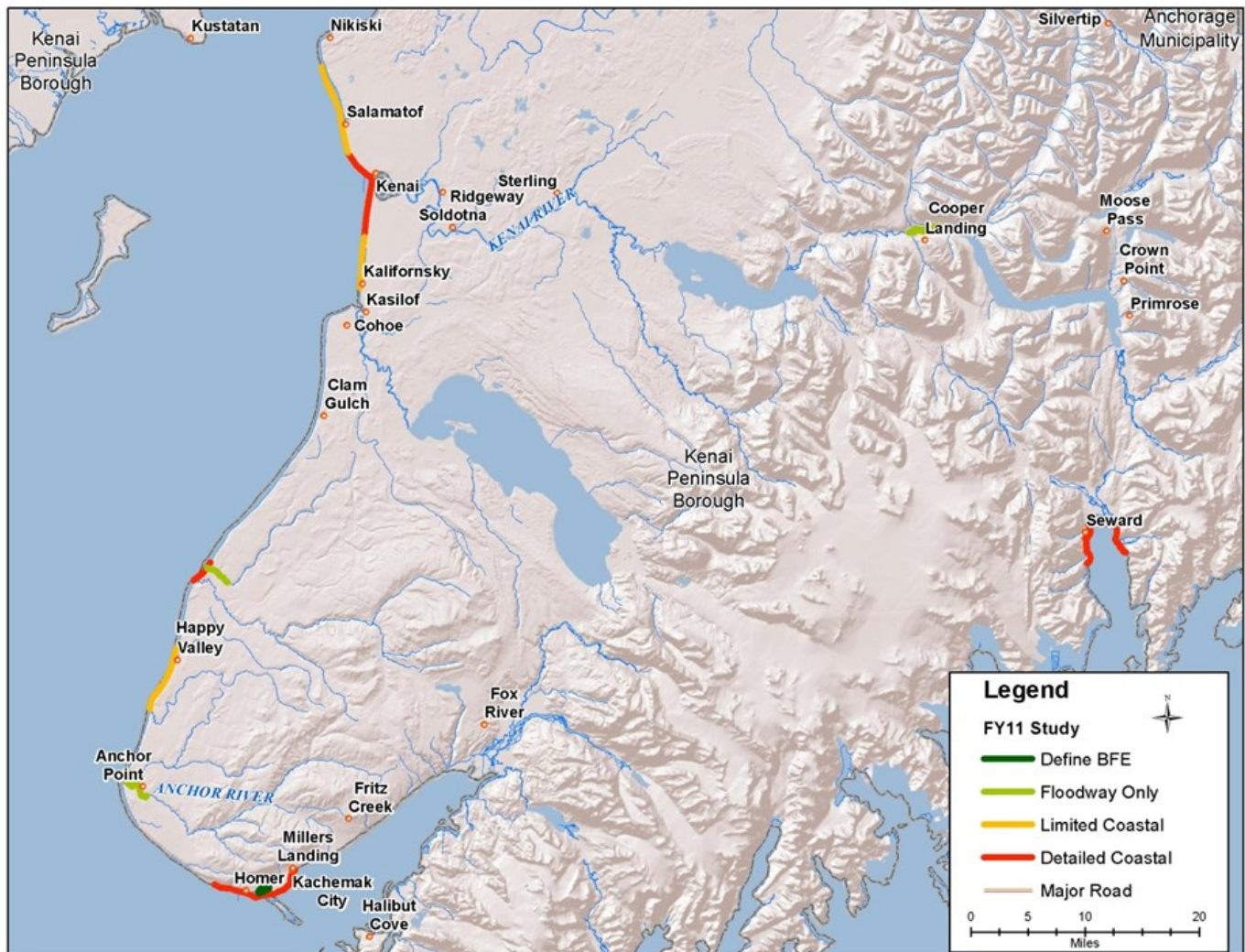
Activity	Actual or Projected End Date
Kenai Peninsula Borough Discovery Interview	January 26-28, 2011
Kenai Peninsula Borough Discovery Meeting	March 2, 2011
Discovery Report	May 2011
Flood Study Kick-Off Meeting	July 23-26, 2012
Draft Maps Released/ Flood Risk Review Meeting	August 27-28, 2013
Preliminary DFIRM/FIS Release	June 13, 2014
Consultation Coordination Officers (CCO) Meeting	September 9-11, 2014
Public Meeting/Workshop	September 9-11, 2014
90-day Appeal Period Start Date	1st: January 28, 2015; 2nd: August 12, 2015
90-day Appeal Period End Date	1st: April 28, 2015; 2nd: November 10, 2015
Letter of Final Determination Issued	April 20, 2016
Draft Multi-Hazard Risk Report	October 6, 2016
Maps and FIS Become Effective	October 20, 2016
Risk MAP Resilience Workshop	August 22-24, 2017
Delivery of Final Risk Report and Risk Assessment Database	Fall /Winter 2017

*\*All projected dates are subject to revision as the project progresses*





**Figure 24: Map of Kenai Peninsula Borough Coastal Project Scope**







### *Ketchikan Gateway Borough*

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the Ketchikan Gateway Borough that began in 2013.

#### **Scope of Work**

The scope of work of the Ketchikan Gateway Borough Risk MAP Study includes (see also the map below):

- A detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics), as well as floodplain boundaries for 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. Updated detailed modeling will be completed for 0.99 miles on Hoadley Creek, 1.2 miles of Ketchikan Creek, and 1 mile on Schoenbar Creek. Redelineation using new LiDAR will be completed for 0.08 miles of Carlanna Creek. The draft maps will be completed in Fall 2015.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in Winter/Spring 2016.
- Collection of LiDAR data in Summer of 2014. This data will be delivered to the community in the Fall 2014.
- All of the above datasets will be in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.



### Status of Ketchikan Gateway Borough Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held August 7, 2013 where community hazard concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the communities in the watershed. After the Discovery Meeting, community hazard concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

Draft floodplain maps were released on March 7, 2016. These maps show the proposed riverine and coastal floodplains. A Flood Risk Review (FRR) Meeting was held on August 4, 2016. The purpose of the meeting was to solicit feedback on the draft maps in advance of the issuance of Preliminary Maps, and inform the communities about the map adoption process.

The Flood Risk Review (FRR) meeting was held on August 4, 2016 and attended by representatives of Ketchikan Gateway Borough, City of Ketchikan, Village of Saxman, FEMA, State of Alaska, and FEMA's mapping contractor. Draft floodplain maps and study methods were reviewed. The 30-day comment period following the meeting ended on September 4, 2016. The list below summarizes the feedback received and how the comments are being addressed.

1. The Borough provided a hardcopy of the Whipple Creek Floodplain Study which was performed by the U.S. Army Corps of Engineers. This study may be incorporated into the regulatory floodplain mapping as a Letter of Map Revision (LOMR) at the community's request.
2. The Borough requested that a panel be added to the regulatory maps to include coastal flood hazard areas at the end of North Tongass Highway. The requested panel is being added to the maps.
3. It was noted at the FRR meeting, that the areas that were not included in the coastal or riverine analysis were mapped as unshaded Zone X. These areas may have been regulated as Zone D.
4. FEMA and its mapping contractor are reviewing these areas to determine the appropriate flood zone. The floodplain for Hoadley Creek at Baranof Avenue is being updated. The Borough had questions regarding whether the divided flow from the culvert would impact the building on the South side of Baranof Avenue. It was noted it could diverge along Carlanna Lake Road STARR has evaluated the area and is revising the floodplain in the vicinity of the building. Flood hazards along Carlanna Lake Road are not being delineated.
5. Several attendees at the FRR meeting questioned the vertical datum conversion. FEMA's mapping contractor confirmed that the correct conversion is being used.

The project team released preliminary mapping products on May 5, 2017 including preliminary FIRM panels, preliminary FIS, and a preliminary Summary of Map Actions (SOMA). These products were developed with consideration of community comments noted during the Flood Risk Review meeting on August 4, 2016.



A Consultation Coordination Officers (CCO) meeting was held on July 18, 2017 at the Ketchikan Gateway Borough offices to present the preliminary FIRM and data to the community officials. During this meeting, differences between the new and the effective FIRM were presented, along with an overview of the appeals and map adoption processes.

Following the CCO meeting, a public meeting will be scheduled to inform the public about the Preliminary Map Products. At this meeting, subject matter experts will be on hand to discuss how the flood maps were developed, provide landowners with the flood designation for their property, and answer questions on floodplain regulations and insurance rates.

Following the public meeting, the formal appeals and comment period will be initiated, which is expected to begin in October 2017. Before the appeals period starts, the Flood Hazard Docket will be published in the Federal Register and a letter will be sent to the communities. The letter will explain the appeal process, including a description of what qualifies as an appeal. After the letter is sent, a legal notice containing the proposed flood hazard determinations will be published twice in the legal section of your local newspaper. The appeal period will officially start with the second newspaper publication and will run for 90 days.

The appeal period is the time when protests and appeals, with supporting technical data, may be submitted. Both technical and non-technical data will be accepted and reviewed for possible incorporation into the maps. Any interested party who wishes to appeal should present the data that tend to negate or contradict our findings to the agency responsible for floodplain management (typically the City or Borough). That agency will then submit appeals to FEMA Region 10 directly. If an appeal or protest results in significant changes, FEMA will revise the FIS report and FIRM and send revised copies to your community for review. At the end of the 90-day appeal period and following the resolution of any comments, FEMA will send the Borough a Letter of Final BFE Determinations (LFD). The scheduled LFD date could change if there are comments, protests, or appeals that require additional processing of the FIS and DFIRM. The effective date for the project will be six months after the LFD.

FEMA funded its mapping contractor to develop a multi-hazard Risk Report for the Ketchikan area as part of the ongoing Risk MAP study. The Risk Report will include a risk assessment of earthquake, flooding, landslide, tsunami, and dam failure hazards. Hazus, FEMA's loss estimation software, will be used to assess earthquake and flood hazards. Once all risk assessments are completed, they will be compiled into the Risk MAP Risk Report and a Resilience Workshop will be held to discuss the results and risk reduction strategies. The Resilience Workshop is expected to take place in late 2017.

The following table illustrates project status and includes major milestones with dates:



**Table 16: Ketchikan Project Status**

Activity	Actual or Projected End Date
Ketchikan Gateway Borough Discovery Interview	June 17, 2013
Ketchikan Gateway Borough Discovery Meeting	August 7, 2013
Base Map Acquisition	February 2, 2014
Discovery Report	Summer 2014
Perform Field Survey	August 31, 2014
Develop Topographic Data	November 30, 2014
Hydrologic Analysis	December 31, 2014
Perform Coastal Analysis/Hydraulic Analysis	July 17, 2015
Perform Floodplain Mapping	September 2015
Develop DFRIM Database	September 25, 2015
Draft Work Maps Released	March 7, 2016
Flood Risk Review Meeting	August 4, 2016
Preliminary DFIRM/FIS Release	May 5, 2017
Consultation Coordination Officers (CCO) Meeting	July 18, 2017
Public Meeting/Workshop	September 2017*
Draft Multi-Hazard Risk Report	Spring 2018*
90-Day Appeal Period Starts	October 2017*
90-Day Appeal Period Ends	January 2018*
Letter of Final Determination	Late Spring 2018*
Risk MAP Resilience Workshop	Summer 2018*
Delivery of Final Risk Report and Risk Assessment Database	Summer 2018*
Maps and FIS become Effective	Late Fall 2018*

*\*All projected dates are subject to revision as the project progresses*



**Figure 25: Map of Ketchikan Gateway Borough Coastal Study Scope**







### *City of Kotzebue*

A Risk MAP Discovery meeting was held February 23, 2011 in order to gain a clearer understanding of the flood hazard mapping, mitigation planning, and communication needs of the City of Kotzebue. The City's desired study areas are listed below.

**Table 17: Desired Risk MAP Study Areas for the City of Kotzebue**

Priority	Study Area	Study Length	Location Description	Study Type
1	Kotzebue Sound	2.64	Shoreline study within city limits	Coastal Detailed
2	Kotzebue Lagoon	6.76	Along the Shoreline of the Kotzebue lagoon	Detailed
3	Swan Lake	0.59	Shoreline study within city limits	Detailed
4	Ponding Areas	<1	Low areas within the city limits subject to flooding from ice thaw	Approximate

After reviewing the mapping needs identified during Discovery and current funding availability, FEMA informed the City that due to federal funding constraints, a new flood study would not be initiated this year; however the area will remain a high priority for a new study when funds become available.

Products that would be provided to Kotzebue through its Risk MAP project include:

- Available topographic data as well as new data in the future, when it becomes available
- Updated non regulatory digital flood hazard data
- Areas of Mitigation Areas of Interest findings and recommendations based on best available data
- Non-regulatory Risk MAP database containing digital project data
- Non-regulatory Risk MAP map and report depicting risk assessment results



### *City of Kwethluk*

The Risk MAP process began for the City of Kwethluk in the summer of 2016.

The Alaska State Risk MAP Coordinator, FEMA's Risk Analyst and the Alaska State Mitigation Planner travelled to Kwethluk on June 16, 2016 to conduct a Risk MAP Discovery Meeting with City of Kwethluk staff and community members. The State and FEMA discussed the purpose of the Risk MAP Program and how it could benefit the City of Kwethluk.

Kwethluk's Local Hazard Mitigation Plan (LHMP) was completed in 2009, so the plan has expired. The City is considering an update to the plan in the near future. FEMA and the State discussed how the Risk MAP process could inform the next update of the LHMP. The community identified flood, fire, permafrost and erosion hazards on a map. This information was developed into a Discovery map, which accompanied the Discovery report, presented to the community in January 2017.

**Figure 26: Kwethluk flood, 2012**





### *Matanuska-Susitna Borough*

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the Ketchikan Gateway Borough that began in 2013.

#### **Scope of Work**

The scope of work of the Matanuska-Susitna Borough Risk MAP Study includes (see also the map below):

Detailed hydrology and hydraulic modeling to include 71.9 miles of riverine study, perform approximate riverine analysis for 316.6 miles, and delineate 15.4 miles of existing areas. Floodplain boundaries will be updated for the 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. The rivers to be updated include:

- Updated detailed modeling (Zone AE) will be completed for:
  - o Little Susitna River (including Split Flows 1-3) = 39.2 miles
  - o Willow Creek = 13.3 miles
  - o Willow Creek Tributary = 7.1 miles
- Limited detail modeling (Zone A with structures) will be completed for:
  - o Wasilla Creek = 10.7 miles
- Updated Approximate Studies (Zone A) will be completed for:
  - o Upper Matanuska River = 14 miles
  - o Point MacKenzie = 2 miles – roughly from Walsop Road to 2 miles downstream of Walsop Road.
  - o Various Zone A = 289.9 miles
- Redelineation of Effective Detailed Studies (Zone AE) will be completed for:
  - o Deception Creek and Tributaries 1-3 = 15.4 miles
- US Army Corps of Engineers (USACE) Studies (Leverage - Zone AE) will also be incorporated to include:
  - o Matanuska River = 3.9 miles
  - o Knik River = 2.7 miles
  - o Bodenbug Creek = 5.7 miles



### Status of Matanuska-Susitna Borough Risk MAP Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held April 23, 2013 where community hazard concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the communities in the watershed. After the Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

Preliminary products (DFIRM panels & FIS report) and data (DFIRM data shapefiles) were mailed on Friday, August 19, 2016 to Matanuska-Susitna Borough and the State of Alaska. The preliminary mailing included: hard copies of preliminary DFIRM panels and FIS report; and digital copies of DFIRM data GIS shapefiles.

The Consultation Coordination Officers (CCO) Meeting was held on January 4, 2017. The CCO meeting is an opportunity for FEMA/State/STARR and Matanuska-Susitna Borough local officials to review the flood data that has been updated, talk through the regulatory process (appeal period, Letter of Final Determination, etc.), and discuss how the Borough would like to proceed with outreach in order to schedule public meeting(s) regarding the preliminary DFIRM maps.

Four (4) public meetings were held on March 15 and 16, 2017 in the communities of Willow, Meadow Lakes, Wasilla and Palmer. Stakeholders and the public were invited to attend the meetings, which had subject matter experts from FEMA, FEMA's mapping contractor, State of Alaska, and Matanuska-Susitna Borough on hand to discuss how the flood maps were developed, provide landowners with the flood designation for their property, and answer questions on floodplain regulations and insurance rates.

### Next Steps

The appeal period for the Matanuska-Susitna Borough Flood Risk study will start after new/modified Flood Hazard Determinations (FHDs) are published in the Federal Register (FR). FEMA's mapping contractor will work with local newspapers to schedule two publications of the FHD notice and FR publication with the appeal period officially starting with the second publication. Once the appeal period start date is established, FEMA will send letters to inform Matanuska-Susitna Borough of the upcoming 90-day statutory appeal period schedule and details. The appeal period is the time when citizens can appeal changes in flood zones, floodways, and base flood elevations, based on scientific or technical issues. Any interested party who wishes to appeal should present the data that tend to negate or contradict our findings to the agency responsible for floodplain management (typically the City or Borough). That agency will then submit appeals to FEMA Region X directly. If an appeal or protest results in significant changes, FEMA will revise the FIS report and FIRM and send revised copies to your community for review.



FEMA funded its mapping contractor to develop a **multi-hazard Risk Report** for the Matanuska-Susitna Borough area as part of the ongoing Risk MAP study. The draft Risk Report was provided to the Borough for review on January 10, 2017. A **Resilience Workshop** will be held in spring 2018 to discuss the results of the Risk Report and risk reduction strategies.

The following table illustrates project status and includes major milestones with dates:

**Table 18: Matanuska-Susitna Borough Project Status**

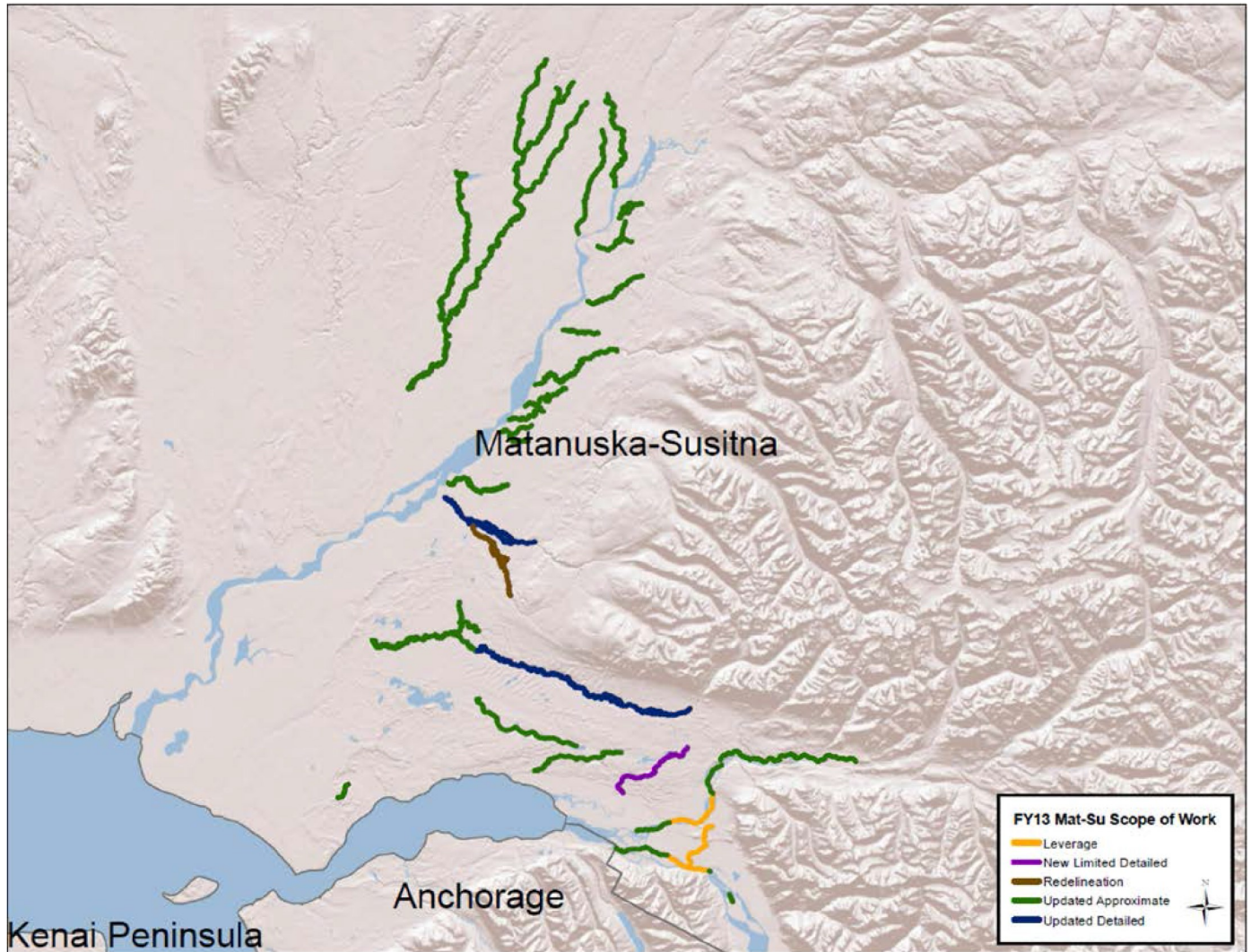
Activity	Projected Completion Date*
Matanuska-Susitna Discovery Interview	March 11, 2013
Matanuska-Susitna Discovery Meeting	April 23, 2013
Flood Study Kick-Off Meeting	December 13, 2013
Draft Workmaps Released	August 28, 2015
Flood Risk Review Meeting	January 20, 2016
Preliminary DFIRM/FIS Released	August 19, 2016
Consultation Coordination Officers (CCO) Meeting	January 4, 2017
Public Meeting/Workshop	March 15 - 16, 2017
Draft Multi-Hazard Risk Report	January 10, 2017
90-Day Appeal Period Starts	October/November 2018*
90-Day Appeal Period Ends	January/February 2018*
Risk MAP Resilience Workshop	Spring 2018*
Delivery of Final Risk Report and Risk Assessment Database	To Be Determined
Letter of Final Determination	May/June 2017*
Maps and FIS become Effective	November/December 2018*

*\*All projected dates are subject to revision as the project progresses*





**Figure 27: Map of Matanuska-Susitna Borough Project Scope**





### *City and Borough of Sitka*

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the City and Borough of Sitka that began in 2013.

### **Study Scope**

The scope of work of the City and Borough of Sitka Risk MAP Study includes (see also the map on page 58):

- A detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics), as well as floodplain boundaries for 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. 0.67 miles of Swan Lake will be updated using approximate modeling and 1 mile of Indian River will be redelineated using new LiDAR. The draft maps will be completed in Spring/Summer 2015.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in Winter/Spring 2016.
- Collect LiDAR in Spring/Summer of 2014. This data will be delivered to the community by Sept. 30, 2014.
- All of the above datasets will be in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.



## Sitka Project Status

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held August 5, 2013 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the communities in the City and Borough of Sitka. After the Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products based on community-identified resilience needs.

FEMA funded its mapping contractor to develop a multi-hazard Risk Report for the Sitka area as part of the ongoing Risk MAP study. The Risk Report will include a risk assessment of earthquake, erosion, flood, landslides, and tsunami hazards. Hazus, FEMA's loss estimation software, will be used to assess earthquake and flood results. Additionally, FEMA has worked with the Alaska Department of Geological and Geophysical Surveys Division (DGGs) to conduct an even more extensive study of the landslide hazards and risks in the area. Once the risk assessments are completed, they will be compiled into the Risk MAP Risk Report and a Resilience Workshop will be held to discuss the assessment results and risk reduction strategies.

On June 30, 2016, FEMA issued updated preliminary mapping for the City and Borough of Sitka. FEMA held a Consultation Coordination Officers (CCO) Meeting via a webinar on October 13 for the City and Borough of Sitka. The CCO Meeting provided information to the community about the map review process and addressed initial questions regarding the preliminary flood hazard data.

At the meeting, there was discussion about FEMA supporting the community of Sitka with an additional Open House/Public Meeting, which was held on January 25, 2017. The Public Meeting/Open House provided members of the community the opportunity to ask flood mapping and insurance questions to subject matter experts.

The 90-day appeal period began on February 27, 2017 and ended on May 28, 2017. The following appeal has been filed:

### Appeal I:

The City and Borough of Sitka Public Works Department submitted an updated Swan Lake HEC-RAS model that lowers the base flood elevation for the lake. The new HEC-RAS project incorporated a new survey performed on an existing pipe culvert in the lake vicinity. In addition to the pipe information, the survey provided more detailed information for the area where the lake could overflow into the round about where Lake Street, Halibut Point Road, and Sawmill Creek Road intersect. The result of the calculations is that the water surface elevation for the lake is at 33.1 compared to a water surface elevation of 34.4 provided by FEMA. This new lake delineation will result in a revised preliminary issuance.

Revised Preliminary issuance in this case will occur due to the following changes:

- Areas showing new or revised Base Flood Elevations (BFEs) or base flood depths;
- Areas showing new or revised Special Flood Hazard Area (SFHA) boundaries (including increases or decreases in the extent of the SFHA); and
- Areas where there is a change in SFHA zone designation

The table on the following page illustrates project status and includes major milestones with dates:



**Table 19: Sitka Project Status**

Activity	Actual or Projected End Date
Risk MAP Discovery Meeting	August 5, 2013
Flood Risk Review (FRR) Meeting/Draft Maps	February 2, 2016
Preliminary DFIRM/FIS Release	June 30, 2016
Consultation Coordination Officers (CCO) Webinar	October 13, 2016
Public Meeting/Open House	January 25, 2017
90-Day Appeal Period Start	February 27, 2017
90-Day Appeal Period Ends	May 28, 2017
Revised Preliminary DFIRM/FIS Release	October 2017*
Draft Multi-Hazard Risk Report	Fall 2017*
Letter of Final Determination	Spring 2018*
Risk MAP Resilience Workshop	Spring/Summer 2018*
Maps and FIS become Effective	Fall 2018*
Delivery of Final Report and Risk Assessment Database	Fall/Winter 2018*

*\*All projected dates are subject to revision as the project progresses*



### Figure 28: Map of Sitka Study Scope







### *City of Seward*

In 2010, FEMA initiated a Risk MAP project to develop a Physical Map Revision of the Japanese Creek Alluvial Fan. The project scope of work includes 2.5 miles of detailed study near the confluence with Lowell Creek. Because the study area includes a levee that hasn't been accredited for National Flood Insurance Program (NFIP) requirements, the project has been placed on hold until FEMA finalizes its guidance for mapping non-accredited levees.

The Seward coastal area is also part of Coastal Physical Map Revision of the Kenai Peninsula Borough (see study area identified on the map on page 64).

### **Coastal Study Scope**

Specific to the City of Seward, the scope of work of the Kenai Peninsula Borough Risk MAP Study includes:

- Ten miles of detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics) of Resurrection Bay.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the Community. A FIS is a book that contains information regarding flooding in a community and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of a regulatory Flood Insurance Rate Map (FIRM) map for all panels within the Community which identifies the Community's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in Winter/Spring 2016.
- All of the above datasets will be in the in the North American Vertical Datum of 1988.
- The State and FEMA will provide guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.



### Status of Seward Project

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held March 2, 2011 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the communities in the Borough. After the Discovery Meeting, community concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

The flood study has since been completed and the new Flood Insurance Study and Flood Insurance Rate Maps became effective on October 20, 2016.

FEMA developed a multi-hazard Risk Report for the Kenai Peninsula Borough as part of the ongoing Risk MAP study. Risk assessments have been completed for tsunami, dam failure, erosion, and flood hazards and have been compiled into a draft Risk Report. The State Risk MAP Coordinator sent the Risk Report out for review on October 6, 2016 and requested comments back by October 28, 2016.

On August 14, 2017, FEMA and the State held a webinar to review the data and results of the Risk Report.

Following this, the State and FEMA conducted a Resilience Workshops in the City of Seward on August 22, 2017. During the Resilience Workshop, community resilience needs, priorities and priority actions were identified. State and federal partners will address the priority actions and apprise local residents of accomplishments.

The table on the next page illustrates project status and includes major milestones with dates:



**Table 20: Seward Project Status**

Activity	Actual or Projected End Date
Seward Discovery Interview	February 2, 2011
Seward Discovery Meeting	March 2, 2011
Discovery Report	May 2011
Flood Study Kick-Off Meeting	July 23-26, 2012
Draft Maps Released/ Flood Risk Review Meeting	August 27-28, 2013
Preliminary DFIRM/FIS Release	June 13, 2014
Consultation Coordination Officers (CCO) Meeting	September 9-11, 2014
Public Meeting/Workshop	September 9-11, 2014
90-day Appeal Period Start Date	1st: January 28, 2015; 2nd: August 12, 2015
90-day Appeal Period End Date	1st: April 28, 2015; 2nd: November 10, 2015
Issue Letter of Final Determination	April 20, 2016
Draft Multi-Hazard Risk Report	October 6, 2016
Maps and FIS Become Effective	October 20, 2016
Risk MAP Resilience Workshop	August 22-24, 2017
Delivery of Final Risk Report and Risk Assessment Database	Fall /Winter 2017



## *City of Valdez*

FEMA and the State of Alaska are conducting a coastal Risk MAP Study in the City of Valdez that began in 2013.

### **Scope of Work**

The scope of work of the Valdez Risk MAP Study includes (see also the map below):

- A detailed coastal flood hazard analysis including the collection of storm surge (coastal hydrology) and overland wave height analysis (coastal hydraulics), as well as floodplain boundaries for 1-percent and 0.2-percent-annual-chance (100- and 500-year) flood events. A riverine analysis will also be performed to include hydrology and hydraulic modeling for 3.8 miles of detailed riverine study on Mineral Creek, 11.7 miles of detailed riverine study on Lowe River, 4.6 miles of detailed riverine study on Valdez Glacier Stream, 2.2 miles of detailed riverine study on Robe River, and 18.7 miles of approximate riverine modeling on various streams. Floodplain delineations and the Flood Insurance Study will be updated for the entire City. A draft map for the coastal analysis will be completed in spring 2014. The draft map for the riverine analysis will be completed in Fall 2014.
- Preparation of a regulatory Flood Insurance Study (FIS) Report document to the City. A FIS is a book that contains information regarding flooding in a city and is developed in conjunction with the FIRM. The FIS, also known as a flood elevation study, frequently contains a narrative of the flood history of a city and discusses the engineering methods used to develop the FIRM. The study also contains flood profiles for studied flooding sources and can be used to determine Base Flood Elevations for some areas.
- Preparation of regulatory Flood Insurance Rate Map (FIRM) map for all panels within the City which identifies the City's flood zones, base flood elevations, and floodplain boundaries. This map is used to determine where the purchase of flood insurance is required for properties with federally-backed mortgages. The preliminary FIS and DFIRM's are scheduled to be released in winter 2014.
- Guidance, feedback, coordination and technical support throughout the Risk MAP Project Life Cycle.



### Valdez Project Status

FEMA, State, and Local stakeholders participated in a Risk MAP Discovery Meeting held January 24, 2011 where community concerns were identified. These concerns were captured in the Risk MAP Discovery Report and delivered to the City of Valdez. After the Discovery Meeting, the City of Valdez's concerns were researched and analyzed, in order to develop a scope of work that includes multi-hazard risk assessment products and updates to the communities' regulatory flood maps based on community-identified resilience needs.

The Valdez Riverine Draft Workmaps were released on April 30, 2015. A Flood Risk Review (FRR) Meeting was recently held Wednesday, August 12, 2015 via web-conference to discuss the draft maps and display the updated analysis of the proposed floodplains.

FEMA's mapping contractor addressed the comments raised by the community originating from the Flood Risk Review meeting of August 2015. Subsequently, FEMA and its mapping contractor met with the community on April 12th, 2016 to review the comment resolutions agreed to move forward with producing the Preliminary Digital Flood Insurance Rate Maps (DFIRMs), which were released on September 15, 2016.

A Consultation Coordination Officers (CCO) meeting was held November 30th, 2016 in the City of Valdez to discuss the results of the project study and preliminary maps with the community officials. Also, the Levee Analysis and Mapping Procedure (LAMP) kick-off meeting was held on January 12, 2017 to introduce the production team and discuss the schedule and scope of the LAMP analysis of the Alpine Woods Levee.

A revised preliminary FIRM/FIS was released February 1, 2017 to correct portions of the special flood hazard area and to add the effective hydraulic model cross sections for the Lowe River within the levee seclusion box. Four revised preliminary panels were re-released to the community superseding their respective preliminary panels that were distributed on September 15, 2016.

On April 6, 2017, FEMA and the State held a Public Meeting/Workshop in the City of Valdez. A second revised preliminary FIRM/FIS was released April 10, 2017.

### Next Steps

The 90-day appeal period is expected to start after the proposed flood hazard determination notice will be published in the Federal Register.

FEMA funded its mapping contractor to develop a multi-hazard Risk Report for the Sitka area as part of the ongoing Risk MAP study. The Risk Report will include a risk assessment of earthquake, flood, landslides, and tsunami hazards. Hazus, FEMA's loss estimation software, will be used to assess earthquake and flood results. Additionally, FEMA has worked with the Alaska Department of Geological and Geophysical Surveys Division (DGGs) to conduct an even more extensive study of the landslide hazards and risks in the area. Once the risk assessments for earthquake, flood, and tsunami hazards are completed, they will be compiled into the Risk MAP Risk Report and a Resilience Workshop will be held to discuss the results and risk reduction strategies. The Resilience Workshop is expected to take place in late summer, 2018.





The table below illustrates project status and includes major milestones with dates:

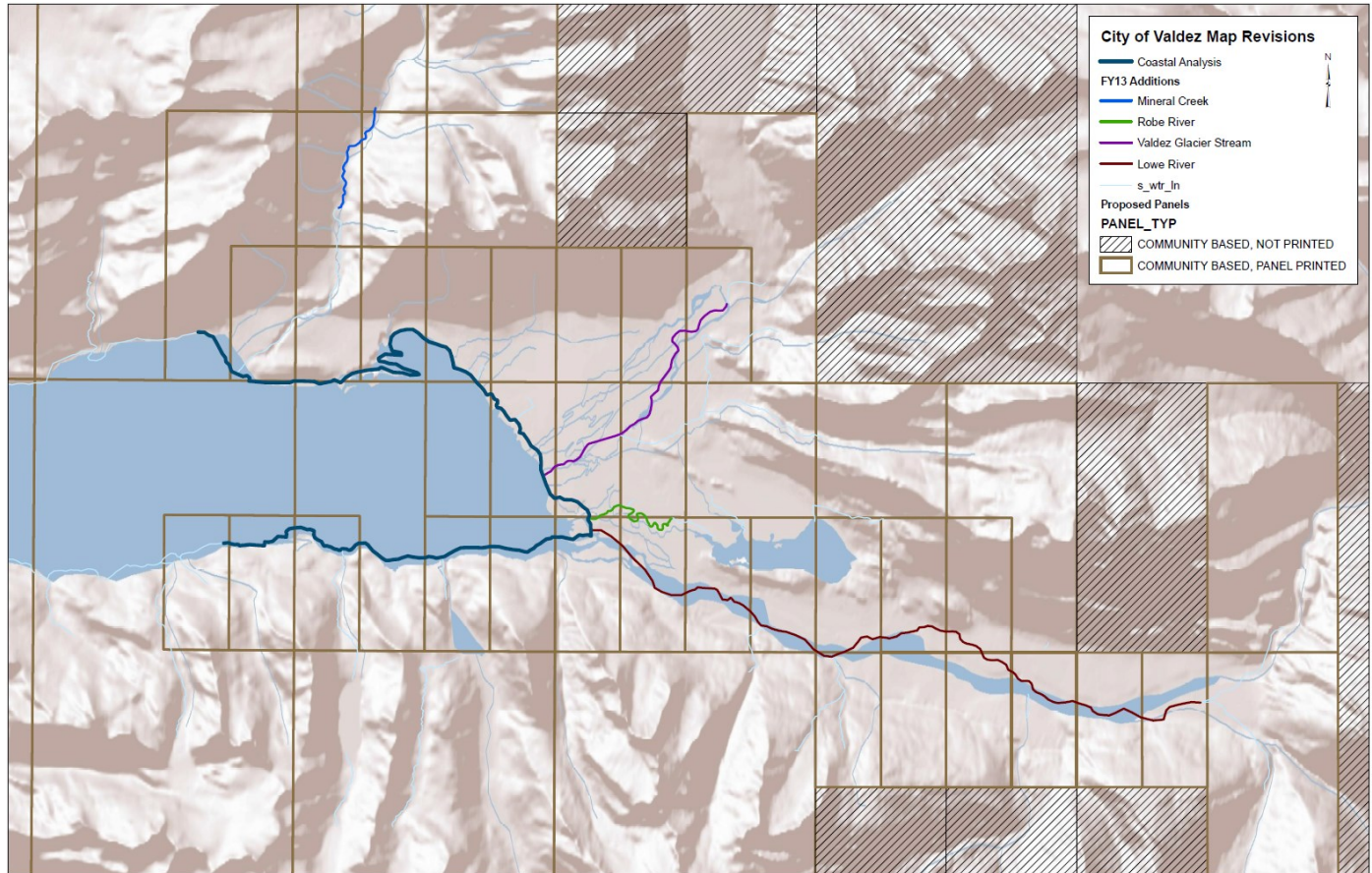
**Table 21: Valdez Project Status**

Activity	Actual or Projected End Date
Valdez Discovery Interview	February 28, 2011
Valdez Discovery Meeting	July 11, 2011
Discovery Report	Summer 2011
Coastal Analysis	Spring 2014
Draft Map Release – Coastal	April 2014
Flood Risk Review Meeting – Coastal	June 26, 2014
Riverine Analysis	Winter 2014/Spring 2015
Draft Map Release – Riverine	April 30, 2015
Flood Risk Review Meeting – Riverine	August 12, 2015
Preliminary DFIRM/FIS Release	September 15, 2016
Consultation Coordination Officers (CCO) Meeting	November 30, 2016
Revised Preliminary DFIRM/FIS Release (first)	February 1, 2017
Public Meeting/Workshop	April 6, 2017
Revised Preliminary DFIRM/FIS Release (second)	April 10, 2017
90-Day Appeal Period Starts	November 2017*
90-Day Appeal Period Ends	February 2018*
Draft Multi-Hazard Risk Report	Spring 2018*
Issue Letter of Final Determination	Summer 2018*
Risk MAP Resilience Workshop	Summer 2018*
Delivery of Final Risk Report/ Risk Assessment Database	Fall 2018*
DFIRM/FIS Effective Date	Winter 2018/19*

*\*All projected dates are subject to revision as the project progresses*



**Figure 29: Map of Valdez Study Scope**



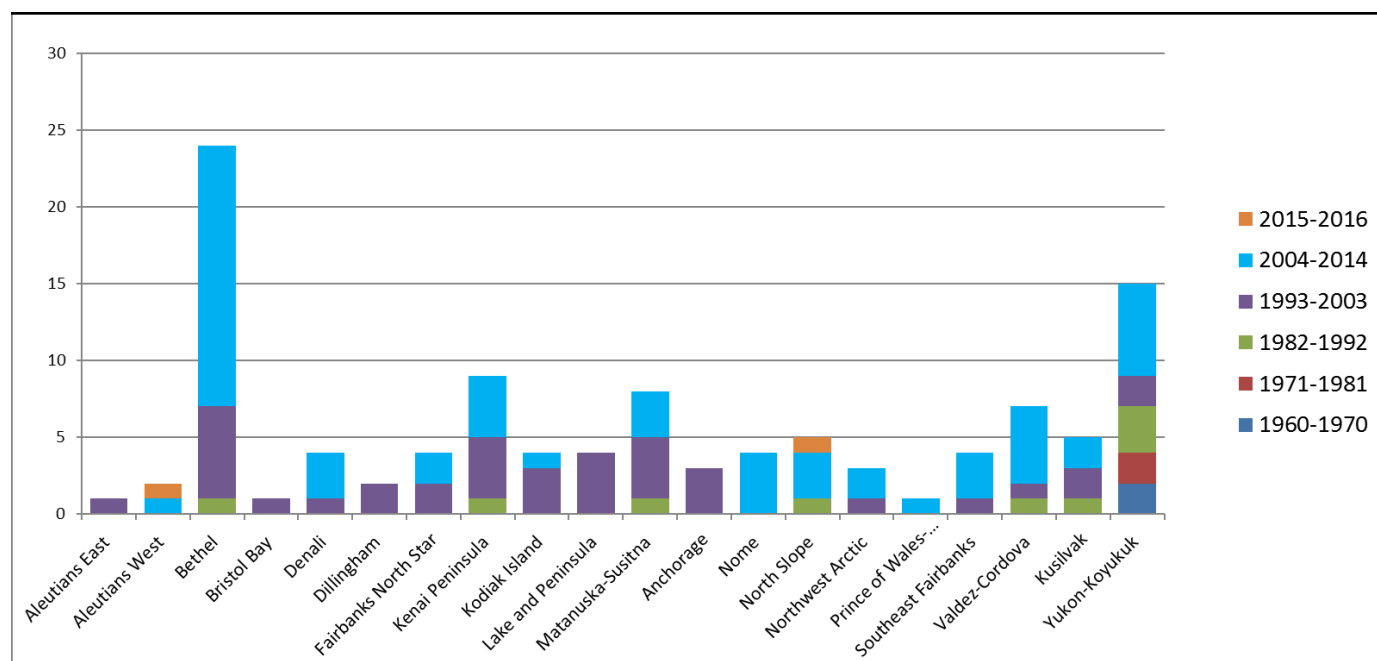


## CHAPTER FOUR: ASSISTANCE TO IMMINENTLY-THREATENED ALASKA NATIVE VILLAGES

On February 16, 2017, during FEMA Region 10's 2017 Mitigation Summit, a number of stakeholders from federal, state, and non-governmental organizations met to discuss the possibility of developing a Risk Mapping, Assessment and Planning (Risk MAP) approach that focuses on Alaska Native communities who are increasingly being impacted by environmental threats such as flooding, erosion and permafrost degradation. (See Appendix 4, page 73, *Risk Mapping, Assessment and Planning: Assisting Alaska Native Villages*).

As illustrated in Figure 3 of the Introduction (page 5), over the last several decades, the number of presidentially-declared disasters in Alaska has increased dramatically. The majority of these disasters are caused by flooding associated with severe storms. Over the past decade, most of these events have occurred in the Bethel and Yukon-Koyukuk census areas (see Figure 30, below). Both census areas are comprised of small, remote, predominantly Alaska Native communities. These communities are especially vulnerable because both census areas are part of Alaska's vast unorganized borough where there is no borough form of government to provide services and other resources to address disaster events. Only six of the 68 Alaska Native villages within these two census areas participate in the National Flood Insurance Program (NFIP). Half of the villages within these census areas are ineligible to participate in the NFIP because they are not incorporated municipalities. Storm events are increasingly putting these communities at risk to loss of life and property. Recent studies indicate that the frequency and intensity of these storms is likely to increase, especially in western Alaska (Terenzi, 2014).

**Figure 30: Alaska Federally-Declared Disasters, Floods or Storms, By Borough/Census Area 1953-2016**





Risk MAP's approach to building community resilience by increasing local understanding of risk, and enhancing local decision-making to take action against risk has great potential for these communities. It is very difficult for a community to know how to respond to hazards without clear understanding and guidance on the nature of the hazard, what the current and predicted impacts are, and what options there are to address the hazard.

A number of efforts have taken place to address severe flooding, erosion and other natural hazards in Alaska's rural communities. Several key observations and needs have been identified through these efforts:

- Assistance to imperiled communities should be based on a fair and defensible methodology which prioritizes communities by level of threat and need
- The community must be a key player in the decision-making process
- Imperiled communities (and the agencies assisting them) need quantifiable data from which to make informed decisions
- A coordinated, interdisciplinary approach to address community threats is essential to increasing community resilience

Prioritization is the first step in the Risk MAP process. States are asked to develop a quantitative approach to prioritize communities to determine which communities FEMA will study. The State of Alaska developed a prioritization methodology to guide the study of NFIP-participating communities in Alaska. A similar approach could be taken to prioritize imminently-threatened Alaska Native villages based on level of threat and need.

Interagency coordination is basic to the Risk MAP process, which relies upon partnerships between federal, state, tribal and local government stakeholders. The State of Alaska Risk MAP Coordinator has organized and facilitated interagency working groups (also known as village planning groups) over the past decade for the communities of Newtok, Kivalina, Shaktoolik and Shishmaref. DCRA, the agency responsible for coordinating the State of Alaska's Risk MAP Program, is tasked by two State of Alaska Administrative Orders (AO 231 and AO 239) "to act as the state coordinating agency to coordinate with the other state and federal agencies to propose long-term solutions to the ongoing erosion issues in... affected coastal communities..."



## DEVELOPING A STRATEGY

### 1. Prioritization Methodology

Using the 2009 Government Accountability Office (GAO) list of 31 Imminently-Threatened Communities as a starting point (see Figure 6, page 11), a list of imperiled communities can be developed. The 31 communities should be reviewed to remove communities that have been abandoned. A clear definition of Alaska Native Village should be developed and regional entities (regional for-profit and non-profit Native corporations) should be consulted. Alaska Native communities identified as environmentally-threatened since the 2009 GAO report should be added to the list.

The Denali Commission has recently engaged the U.S. Army Corps of Engineers and the University of Alaska Fairbanks in a Statewide Threat Assessment Project to collect additional flood, permafrost and infrastructure data for rural Alaskan communities, analyze this data, and then develop a methodology that assigns a risk index for each threat for individual communities, as well as an overall aggregate risk index for all three threats when considered together. These indices can then be used to determine which communities should logically be added to the current GAO list of 31 imminently threatened communities impacted by permafrost degradation, erosion and flooding. Completion of the threat indices and overall threat assessments are due October 2017.

This information can then be used to develop the Alaska Risk MAP prioritization methodology. Development of the methodology would include input from impacted Alaska Native villages as well as other government agencies such as the Alaska Division of Geological and Geophysical Surveys and FEMA's data analytics group.

The draft qualitative matrix would be presented at the Bureau of Indian Affairs' Providers Conference held in Anchorage in December 2017. There may be opportunities to partner with other sessions being held at the Providers Conference as the federal-state team developing an Adaptive Village Relocation Framework has discussed meeting at this even, as has the group involved with the Adapt Alaska effort to promote coastal resilience and adaptation in coastal arctic Alaska (sponsored by three Alaska Landscape Conservation Cooperatives and the Aleutians Pribilof Island Association).

### 2. Stakeholder Engagement

Potential Stakeholders to the Alaska Native Village Risk MAP process include the Alaska Silver Jackets Team, the State Hazard Mitigation Advisory Committee, Alaska Governor's Office (Tribal Affairs), Bureau of Indian Affairs, Denali Commission, NOAA, HUD, Alaska Native Tribal Health Consortium, NOAA, Arctic Executive Steering Committee Community Resilience Working Group, Native American Rights Fund, State and Federal Department of Transportation, EPA, Western Alaska LCC and Alaska Native Claims Settlement Act (ANCSA) Regional Non-Profit Organizations.





Inter-disciplinary partner engagement will be especially important because FEMA doesn't directly address many of the hazards (or other resilience needs) impacting Alaska Native Villages such as:

- Erosion
- Permafrost Degradation
- Food security
- Human health impacts
- Changing weather conditions
- Community capacity

### 3. The Risk MAP Process

A unique Risk MAP process will be required to meet the needs of the Alaska Native villages for which we conduct Risk MAP studies. Some suggestions are outlined below:

#### Pre-Discovery

FEMA and the State will work with the Alaska Native village to understand the needs, resources, and capabilities to support the community in risk reduction and resilience efforts. Ideally, the Risk MAP process would be tied with the Hazard Mitigation Plan update process. The Data Collection and Analysis Phase will begin prior to the Discovery Meeting and continue afterwards once the needs of the village are identified (see Post-Discovery Data Collection and Analysis, below).

#### Discovery Interview

A telephone interview will be conducted with various stakeholders (regional, state, federal) to share current information, current and past projects, historical knowledge, and to identify who the best people are to attend the in-person Discovery meeting.

#### Discovery Meeting

The State Risk MAP Coordinator and a few key stakeholders will conduct an in-person Discovery meeting in the village. The purpose of the Discovery meeting is to gather information on the community's perspective about local natural hazards and their risk. This information will be used to prioritize risk and vulnerability assessments and mitigation planning assistance.

Considerations for the meeting include:

- Need for interpreter in villages where English is the second language
- Number of stakeholders attending (We don't want to outnumber attendees)
- Culturally-appropriate ways to present information
  - o Community gathering/potluck



- o See Discovery Report suggestion under Risk MAP Products and Tools, below)

### **Post Meeting Coordination and Project Scope Development**

This will be a collaborative effort to identify how we can meet the community's resilience needs and how we can align FEMA's effort with other ongoing efforts.

### **Post-Discovery Data Collection and Analysis**

During this phase of the project, funding will be secured, local multi-hazard data will be collected, and risk and vulnerability assessments will be conducted to evaluate the nature, immediacy, probability and severity of each hazard.

Data Collection and Analysis will be a collaborative effort between a number of stakeholders in order to meet the community's resilience needs. The discussion should include:

- Ways to incorporate local/traditional knowledge with science
- How to incorporate local observation as part of the process. Both the Alaska Native Tribal Health Consortium and the Alaska Division of Geological and Geophysical Surveys have local observer efforts and there is real value in training local observers to document change throughout the study process.

### **Risk MAP Products and Tools**

Discovery Report: a supplement to the report would be more helpful for many communities. DCRA has found that providing a map-sized document which can be hung in a public space, allowing community residents to gather and discuss is often more useful than a multipage report. The traditional Discovery Report could still be prepared to meet the needs of agencies. An example of a translated document can be found here:

[https://silverjacketsteam.nfrmp.us/LinkClick.aspx?fileticket=6b\\_0S-nFCso%3d&portalid=0](https://silverjacketsteam.nfrmp.us/LinkClick.aspx?fileticket=6b_0S-nFCso%3d&portalid=0)

### **Resilience Meeting**

The Resilience Meeting provides the community with the opportunity to meet with subject matter experts to discuss how the information, tools and products of the Risk MAP process can be used to inform future planning efforts, reduce risk, and increase local resistance to disaster. A decision on next-steps to implement resilience actions is key to this meeting.

As with the Discovery Meeting, it may be necessary to have an interpreter and to hold the meeting in a community gathering/potluck format. Use of visuals outlining next steps (that can be left in the community) are helpful.



**Figure 31: Flooding in the Village of Golovin, 2011**



*Photo: John Peterson of Golovin*



## CHAPTER FIVE: DCRA: AN EFFECTIVE COOPERATING TECHNICAL PARTNER

Alaska's constitution calls for an executive branch agency to advise and assist local governments (Article X, Section 14). The duty to serve as the constitutional local government agency is delegated to Commerce pursuant to AS 44.33.020(a)(4).6. Within Commerce, DCRA performs the local government agency's functions.

Consistent with its mission, DCRA has been the designated State Coordinating Agency for the NFIP for more than 30 years. DCRA was directed to serve in this capacity by Alaska Administrative Order No. 46, which took effect on January 24, 1978. Currently, Alaska Administrative Order No. 175 designates DCRA as the Governor's designated State Coordinating Agency for the NFIP. Administrative Order No. 175 directs DCRA to assist state agencies in complying with this order through the following land use measures:

- Protecting the state's capital investments by ensuring future state-owned and state-financed construction projects are sited and constructed in a manner that reduces the potential for flood and erosion damage;
- Sighting and constructing state-owned and state-financed projects using FEMA regulations pertaining to construction standards as a guide for flood-prone, mudflow-prone, and flood-related erosion-prone areas;
- Using pertinent portions of the FEMA NFIP regulations, 44 CFR Part 60, as a guide for such construction activities, encouraging a broad and united effort to lessen the risk of flood and erosion losses in connection with state lands and installation and state-financed or supported improvements. Specifically, state agencies directly responsible for building structure construction, and other development including grading, paving, and excavation, shall to the maximum extent possible, preclude the uneconomic, hazardous, or unnecessary use of documented flood plains and erosion areas in connection with such development;
- Considering the potential of flood and erosion hazards. Consideration shall be given to setbacks, flood proofing, building elevation, and erosion control measures in flood and erosion-prone areas;
- Evaluating flood and erosion hazards in connection with lands or properties proposed for disposal and, in order to minimize future state expenditures for protection and disaster relief, shall consider including within all new subdivision proposals and other proposed developments greater than 50 lots or 5 acres, whichever is the lesser, base (100) year flood elevation data, or information on approximate flood risks; and

Taking flood and erosion hazards into account when evaluating plans and permits and encouraging land





use approximate to the degree of hazard involved. As the designated State Coordinating Agency for the NFIP, DCRA was also responsible for the implementation of Alaska's Map Mod program. DCRA additionally fulfills Commerce's charge through two State Administrative Orders (231 and 239) "to act as the state coordinating agency to coordinate with the other state and federal agencies to propose long-term solutions to the ongoing erosion issues in... affected coastal communities..."

DCRA's mission to advise and assist Alaska's local governments, the Division's directive to coordinate with other state and federal entities on behalf of Alaska's local governments regarding erosion hazards, and the Division's historical role in coordinating the NFIP and flood mapping in Alaska make it an effective and appropriate agency to serve as the State Cooperating Technical Partner with FEMA and to coordinate Alaska's Risk MAP Program.

**Figure 32: Ice Jam Flooding in Galena, Spring 2013**



*Photo: Ed Plumb, National Weather Service*





## CHAPTER SIX: STATE OF ALASKA RISK MAP STRATEGY

In order for Alaska's communities to make informed risk management decisions, a consistent risk-based approach to identifying, assessing and planning for the mitigation of natural hazards is necessary. Recognizing the connection between reliable flood maps and flood damage is essential for protecting life and property in Alaska. This is the central purpose of Risk MAP: to provide communities with flood and other hazard information and tools they can use to enhance their mitigation plans and better protect their citizens. Through more accurate flood maps, risk assessment tools, and outreach support, Risk MAP strengthens local ability to make informed decisions about reducing risk and becoming more disaster resilient.

### ROLE OF THE STATE RISK MAP COORDINATOR

The State Risk MAP Coordinator is central to the implementation of Alaska's Risk MAP Program. The Alaska Risk MAP Coordinator serves as the intermediary and primary point of contact between Alaska's local governments and FEMA and FEMA's agents for Alaska's Risk MAP Program. Consistent with FEMA's Risk MAP goals, the Alaska CTP Coordinator will collaborate with other state, local, and tribal entities to facilitate mapping partnerships in order to update flood hazard data and maps and to ensure updated information is used in making informed decisions regarding planning, community development, and hazard mitigation.

The Risk MAP Coordinator will support local communities and FEMA Region X by implementing an integrated programmatic strategy to mapping flood hazards, performing risk assessments, informing hazard mitigation plans, acquiring detailed topographic data, and helping communities and tribes take action to become more resilient to natural disasters.

### THE ALASKA MAPPING BUSINESS PLAN

The Alaska Mapping Business Plan: Integrating Mapping, Assessment, and Mitigation Planning comprehensively evaluates the status of Alaska's flood maps, setting priorities for future mapping and risk assessment, and outlining a collaborative relationship with FEMA to fully execute the Risk MAP strategy for the benefit of Alaska's communities, local governments, tribal entities, and residents.

The purpose of the mapping business plan is to provide FEMA with Alaska's strategy for local government participation in the Risk MAP program. During Federal Fiscal Year 2017, DCRA will reach out to other state and federal agencies, private sector organizations, and non-profit entities by inviting them to Risk MAP meetings and activities. The purpose of this outreach is to develop a plan which leads to stronger support of FEMA's mapping and hazard assessment program, and leverages new financial commitments from other entities with vested interests in improving the accuracy of mapping and hazard data collection in Alaska.



The State of Alaska’s Risk MAP project prioritization process is discussed in the next chapter, *Alaska Risk Map Data Acquisition, Analysis and Prioritization of Future Study Needs*, on page 93.

### KEY STAKEHOLDERS AND SUBJECT MATTER EXPERTS

The value of Risk MAP to Alaskan communities is that it’s not just a mapping project with a beginning and an end. Risk MAP is a process, a continuing, collaborative partnership to help federal, state, tribal, and local community officials, business owners, private citizens and stakeholders make sound floodplain management decisions and take action to reduce risk from floods and other hazards.

Essential to this partnership are key stakeholders and subject matter experts who are engaged and involved in every step of the Risk MAP Process. The Risk MAP Coordinator works throughout the Risk MAP Study with the Risk MAP Project Team. This includes the following team members:

#### *Risk MAP Project Team*

- FEMA Region X Project Officer (Risk Analyst)
- FEMA Region X Engineer
- FEMA Region X Floodplain Management Specialist
- FEMA Region X Mitigation Planner
- FEMA Region X Earthquake Program Manager
- STARR Project Manager
- STARR Engineer/Planner
- Regional Service Center Lead
- State of Alaska NFIP Coordinator
- State of Alaska Hazard Mitigation Officer
- State of Alaska Mitigation Planner
- State of Alaska Mitigation Grants Manager

In addition to the core Project Team, the State Risk Map Coordinator will notify an additional group of subject matter experts and stakeholders at the beginning of each Risk MAP Project. These subject matter experts and stakeholders may be engaged throughout the Risk MAP Life-Cycle of a project, as relevant.

#### *Subject Matter Experts and Stakeholders*

- **State Geologist:** DNR Division of Geological and Geophysical Surveys
- **State Dam Safety Officer:** DNR Division of Mining, Land and Water
- **State Emergency Manager:** MVA Division of Homeland Security and Emergency Management
- **DCRA Local Government Specialists** in Regional Offices: Anchorage, Bethel, Fairbanks, Kotzebue, Juneau, Nome
- **Additional State Risk MAP CTPs:** Municipality of Anchorage, Fairbanks North Star Borough, City and Borough of Juneau, Kenai Peninsula Borough
- **State Coastal Engineers:** DOT/PF Division of Ports and Harbors
- **State Hydrologist:** DOT/PF Statewide Environmental Office
- **Alaska Silver Jackets Team** (there may be some duplication with other stakeholders listed here)
- **University of Alaska Fairbanks Scenario Network for Alaska +Arctic Planning (SNAP)**
- **NOAA Regional Coordinator**
- **U.S. Army Corps of Engineers Floodplain Management**
- **Western Alaska Landscape Conservation Cooperative**



Figure 33: Mapping partners that will be engaged during the Risk MAP Life-Cycle.





## STATE POLICIES AND PROGRAMS THAT BENEFIT FROM RISK MAP DATA AND PRODUCTS

### Alaska Arctic Policy Commission

The Alaska Arctic Policy Commission (AAPC) was legislatively created by HCR 23 (1 & 2) in April 2012. One of the most important aspects of the AAPC's work is to positively influence federal Arctic policy, strategy and implementation. On January 2015, the AAPC adopted an Implementation Plan which sets forth a vision for Alaska's Arctic future

The Alaska Arctic Policy and Implementation Plan creates a framework of policy and recommended actions that can be built upon and adapted to the emerging reality of the Arctic as a place of opportunity, stewardship and progress. The Implementation Plan's Strategic Line of Effort #3 – Support Healthy Communities, Recommendation 3D is to, *“Anticipate, evaluate and respond to risks from climate change related to land erosion and deterioration of community infrastructure and services and support community efforts to adapt and relocate when necessary.”*

The Implementation Plan recommends for execution of this policy,

***“DCCED’s Risk MAP program is a good start to identifying and prioritizing risk, though as a FEMA-funded project it is very specific in the communities it can include.”***

The first recommended legislative action is to,

***“Expand DCCED Risk MAP program and partner with communities who are ready to take action.”***

The second recommended legislative action is to,

***“Conduct high resolution mapping of communities and surrounding landscapes for the development and deployment of evacuation plans in areas where river and coastal flooding are regular occurrences or are likely to occur in coming decades. Prioritize communities currently threatened.”***

### Alaska Arctic Policy Act

The Alaska Arctic Policy Act was signed into law on August 9, 2015 as Chapter 10 SLA 15 (Alaska Statute 44.99.105). The act is designed to guide the state's initiatives and inform U.S. domestic and international Arctic policy in order to best serve the interests of Alaskans and the nation. Section 44.99.105(b) of the act states:

***“(b) It is important to the state, as it relates to the Arctic, to support the strategic recommendations of the implementation plan developed by the Alaska Arctic Policy Commission and to encourage consideration of recommendations developed by the Alaska Arctic Policy Commission.”***

In addition to supporting the recommendations outlined above through the AAPC, the Act identifies policies to,

***“sustain current, and develop new, community, response, and resource-related infrastructure”*** (AS 44.99.105(a)(3)(C)),

and to

***“sustain current, and develop new, approaches for responding to a changing climate, and adapt to***



*the challenges of coastal erosion, permafrost melt, and ocean acidification” (AS 44.99.105(a)(1)(D)).*

## Local Governance

Alaska’s Constitution confers broad authority on its local governments. Alaska State Law requires that planning, platting and land use regulation is carried out by Alaska’s incorporated municipalities: home rule, first and second class boroughs, unified municipalities, and first class and home rule cities outside of boroughs. Local decision-Making and Planning Risk MAP Data and products can enhance planning and decision making at the local level by providing quality data from which wise decisions can be made.

## Alaska Climate Change Impact Mitigation Program

The Alaska Climate Change Impact Mitigation Program (ACCIMP) was established by Alaska’s Twenty-Fifth Legislature to provide technical assistance and funding to communities imminently threatened by climate-related natural hazards such as erosion, flooding, storm surge, and thawing permafrost. The intent of the program is to help impacted communities develop a planned approach to shoreline protection, building relocation and/or eventual relocation of the village.

The ACCIMP is implemented through a two-step process:

1. **Hazard Impact Assessments** are conducted to identify and define the hazard impacts in the community, to assess how those hazards impact the community, and to develop recommendations for how the community might best mitigate those hazard impacts; and
2. **Community Planning Grants** allow communities to carry out one or more of the recommendations from the Hazard Impact Assessment. Results of community planning efforts will provide a common blueprint for investment of federal assistance and state and local resources as well.

It is unlikely that the ACCIMP will receive funding in the near future due to the State’s fiscal situation. However, the new Alaska Native village focus of Risk MAP can accomplish similar results to the ACCIMP by helping communities begin the decision-making process for the adaptation planning process. Risk MAP’s hazard studies and analysis and risk assessment tools can increase local understanding of risk, and enhance local decision-making to take action against risk. Risk MAP data and tools can inform local hazard mitigation plans as well as community comprehensive plans and resilience/adaptation plans.

## Alaska Community Coastal Protection Project

The Alaska Community Coastal Protection Project has focused on three of the most imminently threatened villages in Western Alaska: the communities of Kivalina, Shaktoolik and Shishmaref. The objective of the project has been to increase community resilience and sustainability to the impacts of natural hazards threatening these communities while protecting the natural coastal environment. The project is based on the premise that careful planning, agency collaboration and strong community leadership are essential to successfully addressing the needs of imperiled communities.

Community resilience has been increased through three measures:

- **Interagency Collaborative Support Structure:** Using a collaborative model similar to the Newtok Planning Group, DCRA established interagency planning work groups for the three communities. Through these working groups, collaborative organizational structures were developed to focus the





combined capabilities of local, regional, state, and federal stakeholders on accomplishing the recommended actions for each community, whether it is shoreline protection, elevation of community structures, migration from shorelines, relocation, or a combination of these actions. These planning work groups serve as a vehicle for coordinating resources and technical assistance from state and federal agencies, regional organizations and local governments on a community-specific basis.

- **Local Capacity Building:** A full-time community coordinator was established in each community to work with project staff, representatives of the inter-agency working group, and the contractor, as well as serve as an advocate for funding through grants and other means to implement needed evaluations and action plans. A key role of the community coordinators has been to ensure community representation at the interagency working group meetings. While the grant funding for these positions has been completed, the Denali Commission has since provided funding for the community coordinators to continue this work.
- **Comprehensive Strategic Management Plan:** A contractor was hired to develop a strategic management plan for each community which provides the “blueprint” for how the community and agencies will proceed over the next five years to accomplish the recommended actions the community has decided to take, such as shoreline protection, elevation of community structures, migration from shorelines, relocation, or a combination of these actions. The contractor worked with project staff and the local project coordinators, and attended inter-agency meetings to develop the strategic management plans.

The strategic management planning process would be enhanced by the use of Risk MAP data and products as these tools would benefit the community decision-making process regarding adaptation project to address climate impacts as well as long-term planning.

### *State Grant Programs That Can Support Risk MAP Objectives or be linked to Risk MAP Goals*

The ACCIMP and the Alaska Community Coastal Protection Project, described above, are grant programs administered by the State which support the following Risk MAP objectives:

- Increase public awareness of risk from natural hazards and establish a baseline of local knowledge and understanding of risk management concepts.
- Ensure that a measurable increase of the public’s awareness and understanding of risk results in a measurable reduction of current and future vulnerability to flooding.
- Lead and support states, local and tribal communities to effectively engage in risk-based mitigation planning resulting in sustainable actions to reduce or eliminate risks to life and property from hazards.



## **RESILIENCE PARTNERSHIPS**

The development of collaborative partnerships among resilience associates is a cornerstone of Risk MAP. These partnerships are important throughout the Risk MAP process, from Discovery to Resilience. The relationships developed through these partnerships can provide a more in-depth understanding of natural hazard risk and more robust and effective ways to address community needs. The resilience partnerships in which DCRA has engaged have been extremely important to increasing resilience in Alaska communities. These partnerships are discussed below.

### **Denali Commission**

DCRA has entered into a Memorandum of Agreement with the Denali Commission (Commission) for the State of Alaska Risk MAP Coordinator to provide general support for the development and implementation of the Commission's Village Infrastructure Protection Program.

The Commission is an independent federal agency based on an innovative federal-state partnership designed to provide critical utilities, infrastructure, and economic support throughout Alaska in the most cost-effective manner possible.

On September 2, 2015, the President of the United States announced an initiative to increase resilience in Alaskan communities, stating that "the Denali Commission will play a lead coordination role for Federal, State, and Tribal resources to assist communities in developing and implementing both short and long-term solutions to address the impacts of ... coastal erosion, flooding, and permafrost degradation."

In order to fulfill this role as lead federal coordinating agency, the commission established the Village Infrastructure Protection (VIP) Program. The VIP program is dedicated to assisting rural Alaska communities that are threatened by erosion, flooding and permafrost degradation. The program goal is to mitigate the impact of these threats with respect to safety, health and the protection of infrastructure.

This partnership between DCRA and the Commission makes sense, because DCRA has been a leader for many years in providing technical assistance to rural Alaska communities threatened by coastal/riverine erosion, flooding and permafrost degradation through its management of the Alaska Climate Change Impact Mitigation Program, Alaska Risk MAP Program, and participation on the Governor's Subcabinet on Climate Change - Immediate Action Workgroup. While the Commission and DCRA have been collaborating on VIP Program issues over the last two years, entering into a more formal relationship is expected to lead to more efficient federal/state collaboration and to accomplishing the overall goals of hazard mitigation and increasing community resilience.

This relationship will be of direct benefit to the Alaska Risk MAP Program through the following efforts:



- 1. Statewide Threat Assessment:** as discussed in the section on “*Assistance to Imminently-Threatened Alaska Native Villages*” (page 91), the Denali Commission has recently engaged the U.S. Army Corps of Engineers and the University of Alaska Fairbanks in a Statewide Threat Assessment Project to collect additional flood, permafrost and infrastructure data for rural Alaskan communities, analyze this data, and then develop a methodology that assigns a risk index for each threat for individual communities, as well as an overall aggregate risk index for all three threats when considered together. These indices can then be used to determine which communities should logically be added to the current GAO list of 31 imminently-threatened communities impacted by permafrost degradation, erosion and flooding. Completion of the threat indices and overall threat assessments are due October 2017.

This information can then be used to develop the Alaska Risk MAP prioritization methodology for the Alaska Native village focus. Development of the methodology would include input from impacted Alaska Native villages as well as other government agencies such as the Alaska Division of Geological and Geophysical Surveys and FEMA’s data analytics group.

- 2. Alaska Risk MAP-VIP Collaboration:** because the VIP Program focuses on the same communities as the Alaska Risk MAP Alaska Native village initiative, a clear process can be developed to address the needs of these communities:
  - a. The communities will be prioritized by level of threat using the Denali Commission’s Statewide Threat Assessment.
  - b. Risk MAP Discovery will be initiated with one or two of the most threatened communities every other year. The Risk MAP process will guide each community on the critical steps of identifying and understanding risk, assessing risk and making decisions to respond to that risk. As mitigation actions are identified, increased collaboration can take place to align VIP and Risk MAP projects.

### Alaska Silver Jackets Team

The State of Alaska Risk MAP Coordinator is a member of the Alaska Silver Jackets (ASJ) Executive Steering Committee. Nationally, the Silver Jackets Program is an initiative of the U.S. Army Corps of Engineers (USACE). The objective of the Silver Jackets National Program is to lead collaborative, comprehensive and sustainable silver jackets to improve safety and reduce flood damages to our country. The program overarching goal is to integrate and synchronize the ongoing, diverse flood risk and authorities of FEMA, other Federal agencies, state organizations, and regional and local agencies. The project will encompass a broad strategy of interagency team development, policy studies, risk communication measures development, legislative initiatives professional papers and other means to accomplish this objective.

The Alaska Silver Jackets (ASJ) team of multi-agency and interdisciplinary volunteers work together



toward its shared long view vision, to be a catalyst in developing wise, data supported, comprehensive, and sustainable solutions to all natural hazard issues. ASJ is a data-focused, voluntary, inter-agency, all natural hazard mitigation team of multi-professional / technical staff working together to protect life, property, and resources; with the motto, *“Working Together for Alaska”*

Currently, the ASJ Executive Steering Committee volunteer agencies include:

- Alaska Division of Community and Regional Affairs
- Alaska Division of Geological and Geophysical Surveys
- Alaska Division of Homeland Security & Emergency Management
- U.S. Army Corps of Engineers
- National Oceanic and Atmospheric Administration, National Weather Service
- U.S. Geological Survey
- Federal Emergency Management Agency

Additional Agencies that voluntarily participate include but are not limited to:

- University of Alaska
- Denali Commission
- U.S. Department of Housing and Urban Development
- Alaska Native Tribal Health Consortium
- Alaska Department of Transportation and Public Facilities

Participation in the Risk MAP process by Silver Jackets team members greatly increases the ability to avoid duplication of efforts, especially with tasks and projects such as data collection. By incorporating these stakeholders into the Risk MAP process, there is a better understanding of the flood and other hazard risk in a community and what resources are available to assist the local governments in addressing that risk.

### **Arctic Executive Steering Committee - Community Resilience Working Group**

The State of Alaska Risk MAP Coordinator is a member of the Community Resilience Working Group, a working group under the White House Arctic Executive Steering Committee.

The Arctic Executive Steering Committee (AESC), established by Executive Order in January, 2015, approved a Department of the Interior proposal to examine opportunities for improving federal actions that address the imminent threat of coastal erosion and flooding impacting Alaskan Arctic coastal communities. The AESC formed an interagency Coastal Erosion Working Group (CEWG) *[Renamed in spring 2016 as Community Resilience Working Group (CRWG) at request of AK Native groups]* to coordinate with the State of Alaska, local governments, Tribal governments, and Alaska Native communities to develop recommendations for the AESC to consider. From the AESC meeting’s Summary of Conclusions:

*The Department of Interior will lead a task force with the Army Corps of Engineers, the*



*Departments of Transportation and Housing and Urban Development, Council on Environmental Quality, and the Federal Emergency Management Agency, in coordination with the State of Alaska and Alaska Native communities, to create recommendations to address the imminent threat of coastal erosion and flooding to several high-risk Alaskan coastal communities.*

The CRWG has engaged experts and potential partners throughout the region, and their informed perspectives helped develop a set of recommendations the working group intends to accomplish.

### **Adaptive Village Relocation Framework for Alaska Native Villages**

One of the recommendations of this partnership is to develop a collaborative interagency relocation framework to assist Alaska Native village with relocation. The goals of the framework are to:

- Provide guidance and best practices on the data and analysis necessary to make sound decisions about relocation versus protection-in-place or migration.
- Identify a step-by-step roadmap that both communities and agencies can take, once a community has decided to relocate, that will result in a more efficient relocation process.
- Provide recommendations for changes and improvements that will streamline the use of existing federal and state resources for relocation efforts.

The State of Alaska Risk MAP Coordinator is developing this framework with several federal agency partners, led by the Department of the Interior.

### **Western Alaska Landscape Conservation Cooperative**

The State of Alaska Risk MAP Coordinator is a member of the Western Alaska Landscape Conservation Cooperative (WALCC) Steering Committee. The WALCC is one of 22 Landscape Conservation Cooperatives (LCCs) established by the U.S. Department of the Interior to provide science capacity and technical expertise for meeting shared natural and cultural resource priorities.

Each LCC brings together federal, state, and local governments along with Tribes and First Nations, non-governmental organizations, universities, and interested public and private organizations. LCC collaborative partnerships leverage resources, share scientific expertise, fill needed science gaps, identify best practices, and prevent duplication of efforts through coordinated conservation planning and design. LCCs also help stimulate coordinated action to effect long-term change. The WALCC area spans 750 miles of western Alaska, including the Yukon-Kuskokwim Delta, Seward Peninsula, Alaska Peninsula and Kodiak Island.

In 2016, three of Alaska's LCCs (Western Alaska, Aleutian Bering Sea Islands and Arctic) and the Aleutian Pribilof Islands Association have been working with a number of partners on a series of four workshops *Promoting Coastal Resilience & Adaptation in Arctic Alaska*. The workshops were held in





Nome, Kotzebue, Unalaska and King Salmon. At the workshops, tribal leaders, resource managers, community planners, and scientists explored strategies to adapt to these unprecedented changes along Alaska's coasts.

The WALCC Steering Committee governs the activities of the WALCC. Recently, the WALCC Steering Committee participated in a retreat to develop the WALCC work plan for fiscal years 18 and 19. The following decisions were made for the next two fiscal years:

- The Yukon-Delta Geography was selected as our focal area approach to provide adaptation strategies and recommendations (“Adaptation Planning”) within the WALCC.
- Species shifts and nearshore ice and river ice were selected topics to pursue to advance our ability to address coastal system topics in western Alaska.
- The most important questions to pursue if we have project funding for the above topics include:
  - o Species Shifts – looking at links and relationships among trophic levels and drivers, and need for flexible subsistence/harvest management (including invasive species).
  - o Sea Ice and Nearshore Ice & River Ice – safety and travel, forecasting – make sure to add new questions to tie back to erosion/flooding and species shifts & subsistence (in addition to questions that are already there).

These decisions are noteworthy to the new Alaska Native Village initiative of the Risk MAP Program in Alaska because a significant number of imperiled Alaska Native villages are located in the Yukon Delta. This offers potential partnership opportunities for any Risk MAP projects taking place in this area. As a member of the steering committees of both organizations, the Alaska Risk MAP Coordinator will be engaged in the organization of the workshop.

### **Alaska Silver Jackets - Western Alaska LCC Workshop in the Yukon-Kuskokwim Delta**

The ASJ and WALCC are collaborating on the organization of a workshop that will be held in Bethel, Alaska in the Fall 2018. Representatives of the 56 federally-recognized tribes in the region will be engaged along with a number of state, federal and regional agencies and organizations. The workshop will provide tribal, state and federal agencies community verification of recently gathered data while simultaneously providing resilience education, non-structural mitigation measures and planning data to community leaders and residents for economic and infrastructure development.

This workshop is important to the Alaska Native Village initiative of Risk MAP because the Bethel Census Area has been involved in more federally-declared disasters than any other census area or borough in Alaska. It will be extremely important to bring information on resilience tools and information to communities in this region.



### Adapt Alaska Collaborative

The Adapt Alaska Collaborative developed in order to maintain the momentum of the workshops *Promoting Coastal Resilience & Adaptation in Arctic Alaska* discussed above. The intent is to broaden the partnerships started through the coastal resilience workshops and extend the work to Alaska as a whole. Some goals of this effort are to:

- Continue the capacity-building conversations – the back and forth dialogue between agencies, non-profits, researchers, residents and communities.
- Continue to develop and share information about the impacts of climate change, and the practical strategies to help Alaskans respond to these changes.
- Take full advantage of resilience work to date, both information collected and connections formed between communities, agencies, researchers.
- Bring in new capacity, new partners (e.g., Lieutenant Governor’s office).
- Continue to develop the Adapt Alaska website.

Three working groups have been formed under the Adapt Alaska Collaborative:

- **Coordination/Communication/Outreach Work Group**, whose goals is to keep the ‘movement’ alive and moving forward; no other initiative has the breadth of participants, knowledge or capacity for widespread action in these areas.
- **Resilience Planning Work Group**, whose goal is to improve the value and reduce the burden of State, Federal and other funding agency planning requirements for rural communities working toward adaptation and resilience implementation actions.
- **Integrated Knowledge, Information and Research Work Group**, whose goal is to improve the three-way co-production of useful environmental information, aiming to better integrate:
  - locally based, “indigenous knowledge”
  - outside expertise, “western science; work by “scientists/researchers”
  - needs of consumers of environmental information

The Alaska Risk MAP Coordinator belongs to the Resilience Planning Work Group and Integrated Knowledge, Information and Research Work Group. Information from both of these efforts can enhance work the Alaska Risk MAP Coordinator is doing in Alaskan communities by incorporating leading-edge concepts in integrated knowledge and resilience planning into the Risk MAP process.



## RISK MAP MEETING PARTICIPATION

### State of Alaska Roles and Responsibilities during Discovery

#### Pre-Discovery Coordination

**Purpose:** A watershed is selected for Discovery based on prioritization from the *Alaska Prioritization and Future Studies Sequencing Decision Support System* and the coordinated input by FEMA and the State. Before Discovery begins, FEMA, FEMA's mapping contractor STARR (Strategic Alliance for Risk Reduction) and the State will work together to collect data regarding local flood risks, other hazards, and other community data.

**State CTP Role:** Using the *Alaska Prioritization and Future Studies Sequencing Decision Support System*, the State of Alaska Risk MAP Coordinator will coordinate with the Alaska NFIP Coordinator, the State Hazard Mitigation Officer and the Alaska Siler Jackets Team to identify the top three communities to recommend to FEMA for Risk MAP studies in the following year. The Alaska Risk MAP Coordinator will provide community specific data from DCRA's Community Data as well as mapping data from any community profile maps available for the community.

#### Initial Community Contact

**Purpose:** Contact should be made with each city, tribe, and county within the study area. Planners, emergency managers, and floodplain administrators should all be contacted. Communication is not limited to these groups, reaching out to GIS staff, special purpose districts, non-profit organizations, commerce representatives, and other state and federal agencies is encouraged.

**State CTP Role:** The State of Alaska Risk Map Coordinator will make initial contact with each community in the watershed to be studied to explain the purpose of the Risk MAP Program, and the tools and products it can provide to the community.

#### Discovery Interview

**Purpose:** The Discovery Interview is the first meeting between the Risk MAP Project Team and community officials. The Discovery Interview is usually conducted in a Webinar format and allows the Project Team to further explain the Discovery process and identify natural hazard history and current and future needs of the community for risk reduction. The community is asked to identify persistent flood problem areas and other hazard areas of concern which could be discussed during the Discovery Meetings (mapping needs, desired mitigation projects, repetitive loss locations, etc.) These areas are added to the Final Discovery Map.

#### **State CTP Role:**

The State Risk MAP Coordinator's roles and responsibilities for the Discovery Interview include:

- Schedule the date and time of the Discovery Interview
- Obtain the most recently approved local hazard mitigation plan for the community
- Finalize the agenda for the Discovery Interview, based on a template provided by FEMA and/or STARR
- Send email and calendar invitations to all community stakeholders and project team members, accompanied by copies of the local hazard mitigation plan and Discovery Interview agenda.
- Facilitate the Discovery Interview in coordination with the project team. Goals include:



- Obtain a list of contacts from the community to be invited to Discovery and added to Project Distribution List
- Discuss GIS data needs and availability. Arrange to collect any needed data
- Gain an understanding of current plans and projects in development (Hazard Mitigation Plan updates, Comprehensive Plan updates, Infrastructure upgrades, new areas of development, etc.)
- Gain an understanding of community values , what makes the community special/valuable (social, cultural, or physical infrastructure)
- Understand Critical/Essential Facilities (Schools, Fire, EOCs, Industries, Cultural centers, etc.)
- Current status of grant applications (in development or received)
- Obtain verbal assessment of hazards in community
  - o Recent occurrences of wildfire, landslide, flood, earthquake, etc.
  - o Is there a known risk to hazards
  - o Outreach conducted on hazards
  - o Assistance needed in understanding hazards (mapping, outreach, assessments, etc.)
  - o Actions taken to reduce risk to hazards (buyouts, permits, ordinances, etc.)
  - o Partnerships/working relationships with any agencies on hazard (mapping, assessing, etc.)
- Flood specific questions:
  - o Community Rating System
  - o NFIP enforcement/violations
  - o Levees
  - o Known map issues
- Flood modeling efforts done in the community
- Identify locations for Discovery Meeting, is the community willing to host?

### **Pre-Discovery Team Meeting**

**Purpose:** The Pre-Discovery Team Meeting is a teleconference call between the Risk MAP Project Team to plan for the in-person Discovery Meeting in the community. During the Pre-Discovery Meeting the following items will be discussed:

- Discovery Meeting Location
- Meeting Invitations
- Meeting Agenda
- Meeting Materials
  - o Sign-in Sheet
  - o Projector
  - o Community Maps
  - o Easel/Easel Paper
  - o Markers
  - o Sample Risk Report
  - o Description of State Priority Decision
  - o Outreach Materials Binder
  - o Outreach Materials Thumb Drive
- Attendees



- Roles/Assignments of Attendees
- Travel Schedules
- Meeting Format and Presentation
- Separate Engineering Discussion to discuss flood study needs, if necessary

#### **State CTP Role:**

The State Risk Map Coordinator will work with the Region X Project Officer, Region X Engineer and the STARR Project manager to identify a time frame for the Pre-Discovery Team Meeting. If necessary, the State Risk MAP Coordinator will establish a scheduling poll and notify all Project Team members identified on page X.

Once a meeting date is identified, the State of Alaska Risk MAP Coordinator will send out meeting invitations to the project team members and coordinate with the STARR project manager on the development of an agenda and any additional details for the meeting. Other State departments and agencies will be engaged at this time, as appropriate.

#### **Discovery Meeting**

**Purpose:** The Discovery Meeting is the first in-person meeting that the Project Team has with community officials, affected Tribes, and other key stakeholders across the study area. It is important for the Project Team to understand as much as possible about the watershed's flood hazards and risk prior to the Discovery Meeting.

The Discovery Meeting is a working meeting, so it is important that attendees expect to participate in discussions about their flood risk. The meeting brings the community and other stakeholders in the watershed together. The Discovery Meeting is focused on introducing or enhancing watershed risk concepts and discussing the flooding hazards in the watershed and their associated flood risk.

#### **State CTP Role:**

The State Risk MAP Coordinator's roles and responsibilities for the Discovery Meeting include:

- Coordinate with the community and project team on date(s) and time for the project team to travel to the community to conduct the Discovery Meeting, including lodging, flight schedules, meeting locations and field tours of the community.
- Prepare meeting sign-in sheets based on stakeholder contacts provided by the community
- Finalize the Discovery Meeting PowerPoint presentation based on a template provided by FEMA and/or STARR.
- Facilitate the Discovery Meeting in coordination with the project team.

#### ***Discovery Meeting Goals:***

- Identify risk assessment, technical assistance, mapping, and educational needs of the communities
- Frame the discussion around resilience, not flood study mapping
- Continue developing relationship between communities, State Risk MAP Coordinator, and FEMA

#### ***Meeting Format:***

Conversational PowerPoint Presentation lead by State Risk MAP Coordinator

- Explain the reason FEMA and Subject Matter Experts are present





- Explain how the watershed was chosen (State Risk Map Coordinator can present this piece)
- Resilience Discussion
- Introduction of Attendees to include answering a question or two on how they contribute to the resilience of their community or how they would like to see it increased
- Risk MAP process and product discussion
- Mapping discussion
- Community Discussion on:
  - Areas of concern regarding natural hazards
  - Activities to mitigation natural hazard risk
  - Ways to increase resiliency
  - Flood study priorities
  - Educational needs
  - Potential risk assessments
  - Communication and public outreach
  - Additional data, resources, or funding that me be needed to implement solutions
  - Relationship to mitigation plan
- Identify top Risk MAP priorities
  - Top flood study priorities
  - Top risk assessment priorities
  - Top training and technical assistance priorities
  - Overall number 1 priority?
- Next steps
  - Discovery Report
  - Scope of Work Development
    - LiDAR
    - Mapping Updates
    - Resilience
  - Partnership Agreement
  - Resilience Workshop
  - Engineering Follow-up Discussion?
    - Depending on the chosen format for the Discovery meeting, an Engineering Discovery call may take place after the in-person Discovery Meeting. This call will be led by the contracting engineer and the FEMA engineer. Mapping needs identified through this call will be documented in the Discovery Report.

## Post-Discovery Coordination

### Engineering Discovery Call

**Purpose:** An Engineering Discovery call may take place after the in-person Discovery Meeting. This call will be led by the contracting engineer and the FEMA engineer. Mapping needs identified through this call will be documented in the Discovery Report.

**State CTP Role:** The State Risk MAP Coordinator will assist in the scheduling of the Engineering Discovery Call, participate in the call, and provide other assistance as needed.



### **Discovery Report**

**Purpose:** The Discovery Report will document all information gathered from Project Kickoff through Discovery. The report will include:

- A readable map of the project area
- A list of communities contacted for interview, date of the interview, and participants.
- Community Fact Sheet
- A description of the Discovery Meetings
  - o Date/Time
  - o Location
  - o Participants
  - o Resilience Discussion Notes
- A description of needs identified including:
  - o Risk Assessments/Vulnerability assessments
  - o Planning/Technical Assistance
  - o Educational Needs
  - o Mapping Needs

### **State CTP Role:**

The State Risk MAP Coordinator's roles and responsibilities for the Discovery Report include:

- Review and provide comments on draft Discovery Report prepared by STARR prior to community distribution.
- Email a "Draft" version of the Discovery Report to the communities once it has been completed by the STARR Project Manager.
- Conduct follow-up calls one week after the Draft Discovery Report has been sent to communities, to ensure needs have correctly been captured. All edits will be sent to the contractor.
- Post the Discovery Report on the State of Alaska Risk MAP website for the Risk MAP Project.

The Discovery Report will document all information gathered from Project Kickoff through Discovery. The report will include:

- A readable map of the project area
- A list of communities contacted for interview, date of the interview, and participants.
- Community Fact Sheet
- A description of the Discovery Meetings
  - o Date/Time
  - o Location
  - o Participants
  - o Resilience Discussion Notes
- A description of needs identified including:
  - o Risk Assessments/Vulnerability assessments
  - o Planning/Technical Assistance
  - o Educational Needs
  - o Mapping Needs



## The State of Alaska's Roles and Responsibilities during the Mapping Process

### Scope Development

**Purpose:** If a flood risk project is appropriate for the watershed and the project involves flood engineering analysis, the project team will conduct additional coordination with the impacted communities to discuss anticipated changes to the Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS).

**State CTP Role:** The State Risk MAP Coordinator will reach out to the impacted communities and help organize teleconferences and /or meetings with the Risk MAP Project Team and other State agencies as appropriate

### Study Kick-Off Meeting

**Purpose:** The Kick-Off Meeting marks the official start of the risk identification and assessment for the project areas selected based on the Discovery data and the need for a flood risk identification project. During the Kickoff Meeting the Risk MAP Project Team and community officials will review the scope of the projects, requirements for both the communities and the study team, draft schedules, and assign tasks for updates.

Prior to work starting on any risk assessment or flood insurance study mapping, a meeting must be held with the community to share the scope of work and explain the deliverables resulting from the Project. (FEMA Region X typically hosts a webinar).

Topics of discussion include:

- Project History
- Scope of Work Development Process
- Deliverables
- Anticipated Schedule
- Quarterly Updates

In addition to sharing the Scope of Work at this meeting, FEMA provides a partnership agreement to the community.

### ***Regulatory Guidance for the Flood Study Kick-off Meeting***

*(As detailed in 44 CFR 66.5:)*

#### **66.5 Responsibilities for consultation and coordination.**

- (a) Contact shall be made with appropriate officials of a community in which a proposed investigation is undertaken, and with the state coordinating agency.*
- (b) Local dissemination of the intent and nature of the investigation shall be encouraged so that interested parties will have an opportunity to bring relevant data to the attention of the community and to the Federal Insurance Administrator.*
- (c) Submission of information from the community concerning the study shall be encouraged.*
- (d) Appropriate officials of the community shall be fully informed of (1) The responsibilities placed on them by the Program, (2) the administrative procedures followed by the Federal Emergency Management Agency, (3) the community's role in establishing elevations, and (4) the*



*responsibilities of the community if it participates or continues to participate in the Program.*

*(e) Before the commencement of an initial Flood Insurance Study, the CCO or other FEMA representative, together with a representative of the organization undertaking the study, shall meet with officials of the community. The state coordinating agency shall be notified of this meeting and may attend. At this meeting, the local officials shall be informed of (1) The date when the study will commence, (2) the nature and purpose of the study, (3) areas involved, (4) the manner in which the study shall be undertaken, (5) the general principles to be applied, and (6) the intended use of the data obtained. The community shall be informed in writing if any of the six preceding items are or will be changed after this initial meeting and during the course of the ongoing study.*

**State CTP Role:** The State Risk MAP Coordinator will coordinate with the Project Team and community to schedule a date and time for the Flood study Kick-off Meeting and disseminate meeting materials (draft study scope and study map) to community officials and the Project Team. The draft study scope and map will also be posted on the community study page of the Alaska Risk MAP Program website.

### **Draft Workmaps Release**

**Purpose:** Draft Workmaps are released to give impacted communities a first glimpse of the Risk MAP products. The Workmaps are released to the community prior to the Flood Risk Review Meeting. A GIS Analyst from STARR will email a notice to the Risk MAP Project Team and community officials with instructions on where and how to download the Workmaps.

**State CTP Role:** The State Risk MAP Coordinator will post the Draft Workmaps on the community study webpage on the State of Alaska's Risk Map website and provide the link to community officials and Project Team. The State MAP Coordinator will meet with the State NFIP Coordinator to review the maps.

### **Flood Risk Review Meeting**

**Purpose:** The Flood Risk Review Meeting is a technical/engineering-focused meeting giving community officials the opportunity to review the draft Risk MAP products included as part of the Risk MAP project scope. This type of meeting may also be important for Risk MAP projects that include significant changes in the identified flood risk. The Flood Risk Review Meeting allows the project team to highlight the flood risk associated with the changes, and gives communities the opportunity to review the results and begin communicating that risk to impacted residents and businesses.

The Flood Risk Review Meeting is a recommended, technical/engineering-focused meeting that gives community officials the opportunity to review the draft Risk Mapping Assessment and Planning (Risk MAP) products. The intent of this meeting is to get the communities to get a first glimpse of what the results look like, provide them enough information so they know what went into the effort (and what didn't), prepare for any political challenges that comes with the better understanding of flood risk, and to provide feedback on anything that does not look right. This is the time where it is ideal to get detailed comments from the community as we have not gone through the high cost efforts of quality review checks and getting it into the very specific preliminary map format. A detailed explanation of what has been done and showing flexibility in the approach, if the community can provide educated feedback on how it could be improved, helps to establish technical credibility as one moves forward through the process.

**State CTP Role:** The State Risk MAP Coordinator will schedule a pre-meeting with the State NFIP



Coordinator and local floodplain administrator to address any questions or concerns prior to the scheduling of the Flood Risk Review Meeting. The State Risk MAP Coordinator will schedule the meeting date, time and location in coordination with the Risk MAP Project Team and the community. The State Risk MAP Coordinator will also provide an attendance sheet and assist with meeting facilitation as necessary.

### **Preliminary Flood Insurance Study/Flood Insurance Rate Map (FIS/FIRM) Release**

**Purpose:** The release of preliminary data is an important step in a community's flood mapping lifecycle. There are several benefits for the public and professionals in viewing their community's preliminary data before it becomes an effective FIRM:

- Allows the public to voice their opinions or concerns regarding how the data may affect them or to question data accuracy
- Insurance agents can compare existing FIRMs with preliminary FIRMs to see how their clients may be affected. However, policies cannot be written using preliminary data
- Loan and mortgage brokers can use preliminary data as a guide to determine whether a property may be mapped into a high-risk area, allowing the borrower to be informed of any changes or requirements before finalizing the loan
- Real estate agents and brokers can determine what changes are likely to occur and how it might affect any properties for sale
- Engineers, developers and builders can plan for safer construction

**State CTP Role:** The State Risk MAP Coordinator will post the Preliminary Flood Insurance Rate Maps on the community study webpage on the State of Alaska's Risk Map website and provide the link to community officials and Project Team.

### **Consultation Coordination Officer (CCO) Meeting**

**Purpose:** The CCO Meeting is held by the project team for the local officials in communities receiving new or updated regulatory products such as the FIRM and Flood Insurance Study (FIS) report. The purpose of the CCO Meeting is to present the preliminary FIRM panels and data to stakeholders, including community officials, before presenting the information to the public.

After the release of preliminary FIRMs and FIS reports, FEMA holds meetings to present them first to community officials (Consultation Coordination Officer or CCO Meeting). Any changes in flood risk will be explained and participants will have an opportunity to provide feedback on the products. This is also the meeting where public outreach needs are discussed.

The CCO Meeting is required by 44 CFR 66.5 (f):

(f) The community shall be informed in writing of any intended modification to the community's final flood elevation determinations or the development of new elevations in additional areas of the community as a result of a new study or restudy. Such information to the community will include the data set forth in paragraph (e) of this section. At the discretion of the Regional Administrator in each FEMA Regional Office, a meeting may be held to accomplish this requirement.

**State CTP Role:** The State Risk MAP Coordinator will schedule a pre-meeting with the state NFIP





Coordinator and the local floodplain administrator. Business/economy subject matter experts will also be engaged as necessary. The State Risk MAP Coordinator will schedule the meeting date, time and location in coordination with the Risk MAP Project Team and the community. The State Risk MAP Coordinator will serve as the point of contact between the Risk MAP Project Team and the Community and provide an attendance sheet.

### **Public Meeting**

**Purpose:** Once the preliminary maps are released, the CCO meeting is held, and the appeal period process is started, there is often a request for a public meeting. Most communities request and FEMA likes to support a public open house to help get the word out about the changes to the flood maps and to provide an opportunity for the community to get their questions answered on whether they are in a floodplain, what the flood insurance requirements are, and what the regulations are for floodplain development in these areas.

The format of the public meeting is an open house with a 15 minute simplified overview of the NFIP, the study, and the study process. The open house format is explained and an explanation is given of what questions can be answered at what tables.

**State CTP Role:** The State Risk MAP Coordinator will serve as the point of contact between the Risk MAP Project Team and the Community, and will assist the community with public noticing (sample language), other meeting logistics, and provide an attendance sheet. The State Risk MAP Coordinator will organize the State Table in collaboration with State members of the Risk MAP Project Team and provide information on:

- State Flood Mapping Priorities
- Risk Reducing Strategies
- State Floodplain Regulations
- Available grant funding for mitigation projects

### **Map Adoption Process**

**Purpose:** Once all comments are addressed and any revisions to FIRMs are complete, FEMA sends community leaders a Letter of Final Determination (LFD) stating that the preliminary FIRM will become effective in six months. The letter also notifies each affected floodprone community participating in the National Flood Insurance Program (NFIP) that it must adopt a compliant floodplain management ordinance by the map effective date to remain participants in good standing in the NFIP.

**State CTP Role:** The State Risk MAP Coordinator will provide support as needed when FEMA and state floodplain manager often look at a community's flood reduction ordinance to see what changes need to be made, check in with the communities to see if they understand what they need to do, and see if they can provide any support. It is important that they are aware that this milestone has occurred.



## The State of Alaska's Roles and Responsibilities during the Resilience Phase

### **Development and Communication of Risk Report**

**Purpose:** The Report is meant to be a high-level overview of risk assessment results, organized by community for ease of use. More in-depth explanations of results are provided via the Risk Database and accompanying user-guide.

FEMA Region X has developed a preferred template for its Multi-Hazard Risk Report. In addition to Hazus results from both flood and earthquake, the Risk Report may contain vulnerability assessments for: wildfire, landslide, and tsunami risks.

A key purpose of the FEMA Region X Risk Report is the Hazard Mitigation Plan Analysis Section and the Areas of Mitigation Interest Section. These sections frame a significant amount of the conversation held at Resilience Workshop and are used to form and prioritize mitigation strategies that lead to the advancement of action.

A Draft Risk Report should be provided to communities a minimum of two weeks prior to the Resilience Workshop and should be followed up with a webinar explaining the results.

**State CTP Role:** The State Risk MAP Coordinator will provide a copy of the Draft Risk Report to communities prior to the Resilience Workshop.

### **Pre-Resilience Workshop Coordination**

**Purpose:** Prior coordination for the Resilience Workshop is key in order to assign roles for the workshop and allow key facilitator so to do any necessary research and preparation before the meeting.

**State CTP Role:** In order to increase participation in Resilience Workshop and make it more effective, the State of Alaska Risk MAP Coordinator will schedule a meeting (in-person or teleconferenced) with the community, the State Hazard Mitigation Officer and the State Mitigation Planner to discuss the results of the Risk Report Results and the usefulness of the data gathered. The State of Alaska Risk MAP Coordinator will coordinate the scheduling of any pre-resilience workshop meetings, assist in reaching out to subject matter experts and ensure that appropriate reference products and stakeholders will be available for the meeting.

### **Resilience Workshop**

**Purpose:** A Resilience Workshop is an in-person meeting led by FEMA and the Risk MAP Project Team. The goal of the meeting is to help communities understand the results of the risk assessment products and to develop resilience focused strategies using the new data and resources. During this meeting FEMA, State and Local officials engage with the mapping partners to identify the flood risks through the use of the Risk MAP Products Suite, providing a new perspective and understanding of flood risk within their community.

The Resilience Meeting phase of the Risk MAP Process consists of 2-3 separate meetings:

- Elected Officials Briefing
- Tribal Only Briefing



- Community Participants Resilience Workshop

Goals of the Workshop:

- To get federal, state, and local stakeholders together to discuss feasible strategies to reduce risk
- To achieve a community-level review of mitigation strategies from the Hazard Mitigation Plan and Areas of Mitigation Interest from the Risk Report
- To develop a community-specific list of feasible mitigation and risk-reduction strategies

**State CTP Role:** In order to enhance the workshop, the State Risk MAP Coordinator will schedule an internal State meeting. Perhaps an internal State meeting prior to the workshop to discuss the goal of the workshop and the Areas of Mitigation Interest (AOMI), etc. may enhance the Workshop. The State Risk MAP Coordinator will assist with workshop meeting facilitation as necessary.

### **Post-Resilience Workshop Coordination**

**Purpose:** Mitigation Strategies developed prior to the Resilience Workshop are revised after the Workshop to reflect community priorities. These strategies are first developed by the FEMA Mitigation Planners and Risk Analysts with input from the State Risk MAP coordinator and Risk MAP Project Team.

**State CTP Role:** The State Risk MAP Coordinator will coordinate with the Risk MAP Project Team and other State agencies, as relevant, to revise the mitigation strategies. An internal State call may be scheduled after the workshop to address State projects and strategy.

### **Implementation and Tracking of Resilience Strategies**

**Purpose:** The Final Risk Report containing Recommended Action Strategies should be delivered to the communities within five months of the Resilience Workshop.

Ideas for implementation:

- Offer involvement from the State in an Annual Hazard Mitigation Planning Committee Meeting
- Offer involvement from the State during the update process of the Comprehensive Plan
- Act as a guest speaker in front of City Council supporting adoption of a higher standard ordinance for Risk Reduction
- Coordinate State-sponsored training based on the community's needs
- Facilitate relationship building and resource sharing with other State departments with the community

**State CTP Role:** The State Risk MAP Coordinator will email the Final Risk Report containing Recommended Action Strategies to the community and post the Final Risk Report on the community study webpage of the Alaska Risk MAP website. The State Risk MAP Coordinator will maintain communication with the community to assist with the provision of data and other technical assistance. The Risk MAP Coordinator will work with other state staff as necessary to assist with the implementation of identified actions and strategies. Based on results of the Risk MAP process, each community should be working towards accomplishing at least one of the risk reduction strategies offered in the Risk Report. The State Risk MAP Coordinator will also be the direct line of communication to FEMA staff in reporting progress of action item implementation.





**Figure 34: Flooding along Creek Street, Ketchikan, Alaska**



*Photo: National Weather Service*



## CHAPTER SEVEN: ALASKA RISK MAP DATA ACQUISITION, ANALYSIS AND PRIORITIZATION OF FUTURE STUDY NEEDS

In order to better align the goals and vision of the State of Alaska's Risk MAP Program with the goals and vision of FEMA's Risk MAP Program, DCRA established the FY2010 task of acquiring relevant mapping data, analyzing that data, and prioritizing the State of Alaska's future study needs.

To accomplish this, state agencies and local communities were coordinated with to obtain information and data necessary for the prioritization of mapping needs. A consulting firm, URS, Inc., was hired to carry out this process. The process of data acquisition, analysis, and prioritization of future study needs is discussed in the sections that follow.

### ALASKA MAPPING DATA

The first step in the development of a tool to prioritize Alaska's future study needs is the collection of the appropriate data. State, Federal, regional, local and private entities were contacted to obtain information and data necessary for the prioritization of mapping needs in Alaskan communities participating in the NFIP. The information collected includes previously unidentified needs, significant climatological changes, planned future development, available topographic data, and available digital data depicting the built environment that are necessary for flood risk assessments. Depending on the nature of the information, the collected information was catalogued within an Excel Workbook, *AK-Data\_Summary.xlsx*, or an ESRI ArcGIS geodatabase.

### State and Local Data

The Alaska Mapping Business Plan recognizes 163 incorporated municipalities of which only 32 participate in the NFIP. Since the current Risk MAP focus is to update flood maps, data collection, analysis and prioritization of mapping needs focuses on NFIP-participating communities. A variety of state and local sources were utilized to acquire needed data.

### Community Specific Data Collection

This effort focused on fulfilling the Mapping Business Plan's stated purpose and objectives identified in "Future DCRA Risk MAP Business Plan (MBP) Goals, Task 1B:

- Compile and update data on flood and other hazards
- Determine community specific previously unidentified needs
- Determine climatological changes and unidentified impacts
- Identify future planned development which could impact floodplains
- Identify the availability of newly acquired community specific topographic data
- Identify built environment dataset availability and quality





- Determine mitigation plan quality

The data collection and analysis effort entailed contacting State, Federal and local governments participating in the NFIP along with private entities to gather required data to fill the MBP data gaps. For the most part, community representatives willingly and enthusiastically supplied needed information viewing their involvement as having a two-fold benefit – the opportunity to potentially receive funding while simultaneously improving their ability to fulfill their floodplain management responsibilities.

The project included developing individual NFIP participant questionnaires to assess data gaps addressed in the first MBP Goal and its associated Task 1B. The completed questionnaires will provide essential data to support MBP updates and/or inclusion within the plan.

A review of the questionnaire responses reveals that planning, zoning, geographic information systems (GIS), topographic data availability, and community resource capability or capacity is directly related to the community size, affected population, rural location, and hazard risk. The smaller, more rural communities have severely limited capacity to develop or regulate building construction. However, most all communities do guide land-use to ensure new construction does not occur within known hazard zones. The completed questionnaires demonstrate these building code or land-use regulation and enforcement inconsistencies.

It is imperative to the majority of the participating communities that new flood hazard assessments be accomplished to obtain up-to-date flood hazard maps. Their maps are 20 to 60 years old, topography, development, and populations have changed along with associated infrastructure improvements. Consequently the current flood maps do not reflect current conditions and associated hazard risks. Most of these communities rely on historical flood impact knowledge to manage their floodplain because their paper maps no longer adequately identify impact areas. Digitized maps will not make a difference for rural communities with limited technological capabilities, because they cannot afford GIS, staff to manipulate the information, or in some cases the capability to contract this service out.

Additionally, a need was identified for a mechanism to re-adjust ongoing flood map updates to incorporate newly available data that would in some cases drastically change the in-progress map's impact areas, especially as the schedules for these flood map updates span multiple years. For example, the following is an excerpt from the Fairbanks North Star Borough questionnaire response:

*“The current restudy effort was started in 2006 and is one of FEMA's last MAP Mod projects. Only a portion of the FIRM is being restudied and will be digital upon final adoption. FNSB successfully appealed certain elements of the revision upon review of the initial drafts first released in June of 2009.*



*The successful appeal was possible in large part due to updated hydrology gathered by the Alaska Railroad in their Conditional Letter of Map Revision (CLOMR) application associated with their proposed new bridge crossing of the Tanana River.”*

*The [Alaska Railroad] ARRC CLOMR process uncovered previous mapping shortfalls on the part of the FEMA mapping contractor which has delayed finalizing the FIRM updates. The CLOMR application essentially showed how the model used by FEMA in their mapping was flawed. As well, FEMA underwent a contractor change-over, which has further delayed release of the new DFIRMS. Additionally, FEMA headquarters made a “levee policy” change nationwide, which has also adversely affected the timely adoption of the DFIRMS.*

*In the meantime, [Fairbanks North Star Borough] FNSB has since acquired new LIDAR (very accurate with 2' contours which includes the Boroughs unnumbered 'A Zones') from the Corps of Engineers. FEMA has stated that is simply not possible due to funding and time constraints. It is essential that this new LIDAR information be included in this current map revision. Risk MAP restudies for large areas of populated unnumbered A zone areas will take years to accomplish.”*

The collected information and data is compiled and available and included in ***AK\_data\_summary.xlsx*** and supports the MBP’s future study needs assessment for the participating NFIP participating communities.

## Federal and Regional Data

### Average Annualized Loss

In 2009 FEMA initiated the Average Annualized Loss (AAL) Study to provide a Nationwide Loss Dataset.

- |                                 |  |
|---------------------------------|--|
| • 2009 Population               | • Number of Repetitive Losses                            |
| • Population Increase 1980-2009 | • Number of Repetitive Loss Properties                   |
| • Population Increase 2009-2019 | • Average County Fed Disasters (As Of 7/2009)            |
| • 2009 Housing Units            | • Total NHD Miles + Coastal W Inlets - Federal NHD Miles |
| • Single Claims                 |  |
| • Policies                      |  |

The analysis was performed using HAZUS-MH for every county in the contiguous United States. Annualized losses are maximum potential losses for a given year based on five return periods (10, 50, 100, 200, and 500yr). Unfortunately, the State of Alaska was not included in this analysis. Even though no AAL exists for the State of Alaska, it is mentioned and being considered as a potential future dataset as it is an important data gap in the current FEMA prioritization methodology.



### Non-Average Annualized Loss

This dataset was used to generate the flood risk deciles used in the Flood Map Modernization (Map Mod) program. The decile calculations included the use of several national datasets. This data is summarized on a HUC-8 watershed basis and is included in *AK\_data\_summary.xlsx*

### Census Data

The most recent 2010 census data was collected as supporting information to the Community Boundaries and Information. Some of the parameters that will be used in the prioritization of future studies may be weighted by population in order to determine relative risk. This data is organized by census block and is presented in the *AK\_Sequencing.gdb*.

### Community Boundaries and Information

Community information from three separate sources (State Data, Census Data, and FEMA); was collected and compared. The State uses FIPS and CID numbers found in FEMA's CIS database. However, many communities do not have a number because they are outside a designated borough but are located in Alaska's "Unorganized Borough." The databases also had misspellings, incomplete community names, and other inconsistencies exacerbating database search difficulties. NFIP participating municipalities located in the Unorganized Borough are listed by census area and contiguous boundaries have been developed by FEMA. These boundaries are located as the feature class *AK\_Communities\_FEMA* found within the *AK\_Sequencing.gdb* geodatabase. These contiguous boundaries will be used in the prioritization of future studies.

### Data Comparison

A comparison of the three data sources is shown in the table on the next page and the resolution to the inconsistencies is noted in the last column.

**Table 23: Comparison of Data Sources on Alaska Communities**

Community FIPS from State Data Community List & FEMA's Community Status Book		Community FIPS from 2010 Census Data		Community FIPS from FEMA		Notes
Borough	FIPS	Borough	FIPS	Borough	FIPS	
Aleutian Islands	02010					FIPS 02010 covered by STCOFIPS 02013 and 02016
		Aleutians East	02013	Aleutians East	02013	
		Aleutians West Census Area	02016	Aleutians West	02016	
Anchorage Division	02020	Anchorage Municipality	02020	Anchorage	02020	
Angoon Division	02030					FIPS 02030 covered by STCOFIPS 02232
Barrow-North Slope Division	02040					FIPS 02030 covered by STCOFIPS 02185
Bethel Div.	02050	Bethel Census Area	02050	Bethel	02050	
Bristol Bay	02060	Bristol Bay	02060	Bristol Bay	02060	
		Denali	02068	Denali	02068	
Dillingham	02070	Dillingham Census Area	02070	Dillingham	02070	
Emmonak-Unorganized Borough	02999					FIPS 02999 covered by STCOFIPS 02270
Fairbanks North Star	02090	Fairbanks North Star	02090	Fairbanks North Star	02090	
Haines	02100	Haines	02100	Haines	02100	
		Hoonah-Angoon Census Area	02105			02105 C. A. covered by STCOFIPS 02232
Juneau Division	02110	Juneau	02110	Juneau	02110	
Kenai Peninsula	02122	Kenai Peninsula	02122	Kenai Peninsula	02122	
Ketchikan Gateway	02130	Ketchikan Gateway	02130	Ketchikan Gateway	02130	
Outer Ketchikan Division	02190					FIPS 02190 covered by STCOFIPS 02201
Kobuk Division	02140					FIPS 02140 covered by STCOFIPS 02188
Kodiak Island	02150	Kodiak Island	02150	Kodiak Island	02150	
Kuskokwim Division	02160					FIPS 02160 covered by STCOFIPS 02290
Lake and Peninsula	02164	Lake And Peninsula	02164	Lake and Peninsula	02164	
Matanuska-Susitna	02170	Matanuska-Susitna	02170	Matanuska-Susitna	02170	
Nome Division	02180	Nome Census Area	02180	Nome	02180	
North Slope	02185	North Slope	02185	North Slope	02185	
Northwest Arctic	02188	Northwest Arctic	02188	Northwest Arctic	02188	
Prince of Wales Div.	02201			Prince of Wales-Outer Ketchikan	02201	
Sitka Division	02220	Sitka City and Borough	02220	Sitka	02220	
Skagway-Yakutat Division	2230	Skagway Municipality	02230			02230 Census Area covered by STCOFIPS 02232
				Skagway-Hoonah-Angoon	02232	



*(continued)* **Table 23: Comparison of Data Sources on Alaska Communities**

Community FIPS from State Data Community List & FEMA's Community Status Book		Community FIPS from 2010 Census Data		Community FIPS from FEMA		Notes
Borough	FIPS	Borough	FIPS	Borough	FIPS	
Southeast Fairbanks	02240	Southeast Fairbanks Census Area	02240	Southeast Fairbanks	02240	
Upper Yukon	02250					FIPS 02250 covered by STCOFIPS 02290
Valdez-Chitina	02260					FIPS 02261 covered by STCOFIPS 02261
Valdez-Cordova	02261	Valdez-Cordova Census Area	02261	Valdez-Cordova	02261	
Wade Hampton Division	02270	Wade Hampton Census Area	02270	Wade Hampton	02270	
Wrangell-Petersburg	02280			Wrangell-Petersburg	02280	
		Yakutat	02282	Yakutat	02282	
Yukon-Koyukuk	02290	Yukon-Koyukuk Census Area	02290	Yukon-Koyukuk	02290	
		Unnamed Census Area	02195			02195 Census Area covered by STCOFIPS 02280
		Unnamed Census Area	02198			02198 Census Area covered by STCOFIPS 02201
		Unnamed Census Area	02275			02275 Census Area covered by STCOFIPS 02280

### Coordinated Needs Management Strategy (CNMS) data

CNMS is a FEMA initiative to update the way FEMA organizes, stores, and analyzes flood hazard mapping needs information for communities. It defines an approach and structure for the identification and management of flood hazard mapping needs that will provide support to data driven planning and the flood map update investment process in a geospatial environment. Every stream and coastal reach nationwide is currently being assessed to determine its status.

For the State of Alaska, approximately 1,000 stream miles have been inventoried and analyzed to determine whether the stream or coastal miles meets its criteria of New, Validated or Updated Engineering (NVUE). The question CNMS will address is whether a stream (or coastal) segment is NVUE compliant. The dataset provided by FEMA shows all stream miles within Alaska as either being “Not Valid” or “Requires Assessment”. According to STARR, Production and Technical Services (PTS) contractor for FEMA Region X, it is important to note that for the current CNMS inventory for Alaska in general, only FEMA’s digital data was evaluated so if the area didn’t have a DFIRM then it was unlikely to make it into the evaluation process. This means that participating communities with paper maps only do not have their flooding sources reflected in the current CNMS database.

Because the CNMS dataset is inherently a GIS database, it has been left in its original format – as a





separate geodatabase.

### Available Topography

FEMA tasked the Risk MAP Production and Technical Services (PTS) contractors to develop a Geospatial Data Inventory (GDI) of available high-quality elevation data across the Nation. The results of their efforts are summarized in a report titled *Geospatial Coordination High Resolution Topographic Inventory, Version 1.0* dated May 31, 2010.

A summary for Alaska is extracted from that report is provided as follows:

*“Alaska – A majority of existing elevation data is located within the Kenai Peninsula Borough including several LiDAR datasets for the City of Seward flown in 2006 and 2009 (15 cm RMSE vertical accuracy) as well as several USGS-provided datasets covering a majority of the peninsula. Age and vertical accuracy information for this data is currently unknown. Additional LiDAR data is available for the North Slope and Yukon-Koyukuk Boroughs in northern Alaska. Vertical accuracy (where known) for most elevation data in Alaska ranges from 5-30 cm RMSE and would support 0.5-4 foot contours. Existing datasets were created in 2007 or more recently. Major source contributors included USGS’s CLICK website, OpenTopography.com, state and local contacts. Very little high-resolution topographic data exists for Alaska. Several important LiDAR projects are planned for 2011 in areas within Mat-Su Borough as well as coastal areas within the Municipality of Anchorage.”*

Local communities were also questioned as to the availability of topographic data. This data is summarized on a community basis and is included in *AK\_Data\_Summary.xlsx*, and includes datasets not identified in the GDI described above such as the newly acquired LiDAR in 2011 for the Mat-Su Borough.

### Letters of Map Change (LOMC)

LOMCs, specifically Letters of Map Amendments (LOMAs), can be used as an indicator that a map may need revision. Letters of Map Revision (LOMR) have been excluded from this dataset because, by definition, approved LOMRs already address the mapping need and are the effective NFIP document for the area covered by the LOMR restudy. LOMAs can be summarized on a borough, community, or flooding source basis. This dataset is included in Tab 12, *AK\_Data\_Summary.xlsx* (see also Appendix 1, Table 8).

### Mitigation Plans

The latest report to FEMA regarding the status of Mitigation Plans was dated June 24, 2011. The dataset includes FIPS, CID, and population information for jurisdictions added in May 2011 from the FEMA Community Layer.

The presence of active mitigation plans indicates those communities are proactive in managing flood related risks. Therefore, those watersheds with a high percentage of their areas intersecting communities with mitigation plans in place are usually given a higher priority for future studies. Local communities were also questioned as to the availability of mitigation plans. This data is summarized on a community basis and is included in Tab 7,



AK\_Data\_Summary.xlsx (see also Appendix 1, Table 7).

### Non-Compliance with the NFIP

When attempts to resolve enforcement problems through community assistance or consultation have failed, the FEMA Regional Director may place a community on probation. The probationary period lasts at least until all program deficiencies have been corrected and violations have been remedied to the maximum extent possible, and it may be extended for up to one year after that. Probation has no effect on the continued availability of flood insurance. If the community fails to take remedial measures during the probationary period, the Regional Director may recommend suspension from the NFIP which would prevent residents from obtaining flood insurance. A community may also be reinstated on probationary status after having been suspended. This data is summarized on a community basis and is included in Tab 6, *AK\_Data\_Summary.xlsx*.

### Community Rating System (CRS)

The CRS is a voluntary program for NFIP-participating communities. Information on the State of Alaska's current listings of all CRS communities, their class, and insurance discount has been collected and are summarized on a community basis. It is included in Tab 4, *AK\_Data\_Summary.xlsx*.

### Disaster Declarations

A Major Disaster could result from a hurricane, earthquake, flood, tornado, or major fire which the President determines warrants supplemental federal aid. To be considered for this aid the impacts of such an event must clearly exceed the capability of state or local governments' resources or capability to manage the consequences alone. If declared, funding comes from the President's Disaster Relief Fund, which is managed by FEMA, and disaster aid programs of other participating federal agencies. Data for the State of Alaska was pulled from FEMA and is included in Tabs 9 and 10, *AK\_Data\_Summary.xlsx* (see also Appendix 1, Table 7).

### Federal Insurance Administration (FIA) Data

Flood insurance information was collected from the FIA. It contains the number of single claims, the number of policies in effect, the number of repetitive losses, and the number of repetitive loss properties summarized at the borough level. The data for the State of Alaska is included in *AK\_Data\_Summary.xlsx* (see also Appendix 1, Table 4.)

### Hazard Mitigation Grant Program (HMGP)

Participation in FEMA's HMGP can give a good indication that a community is willing to mitigate the risks of flood hazards. Data for the communities within the State of Alaska participating in HMGP was pulled from FEMA and is included in Tab 5, *AK\_Data\_Summary.xlsx* (see also Appendix 1, Table 8).



## ALASKA PRIORITIZATION AND FUTURE STUDIES SEQUENCING DECISION SUPPORT SYSTEM

### Overview

The Alaska Prioritization and Future Studies Sequencing Decision Support System is a ranking methodology intended to provide relative comparisons between watersheds based on a number of normalized factors in the State of Alaska. It provides an analysis of information gathered on a local, state, and nationwide basis to provide a prioritization list of Alaskan watersheds to be studied under FEMA's Risk MAP Program. The term "county" used throughout this report is synonymous with the State of Alaska's "borough" and "census area" classifications.

Building upon the concept of the Risk MAP 'trifecta' approach employed in the Fiscal Year 2011 (FY11) Algorithm, this solution incorporates several additional datasets, grouping them by type, and allowing users to assign customized weighting to each of the contributing factors. While the FY11 algorithm compares absolute values of one watershed to absolute values of another watershed for Flood Risk, Need and Topographic Coverage, this new approach leverages state and local considerations based on community input to develop a ranking of Hydrologic Unit Code (HUC) 8 watersheds within Alaska. It considers the local preferences for prioritization, such as climatological change, local hazard mitigation plans, planned future development, coastal exposure, etc. Special considerations are given to communities with plans in need of updating and with an expressed interest in plan improvement or development.

A total of 16 Indicators have been considered. Individual indicators have been grouped into one of the following three factors: Flood Risk, Needs, and Action Potential. The system is built in a robust and user-friendly environment that allows users to modify the contribution of each factor (or each indicator) based on local knowledge and preference. Instructions for viewing and modifying the weights for the various ranking factors are embedded in the spreadsheet tool, *Alaska\_Risk MAP\_Prioritization.xlsx*.

### Acquired/Standardized Data

Various datasets were identified, collected, assembled, and analyzed through the process. Data was obtained from different sources, such as federal, regional, and state agencies, as well as local communities. The focus of this effort was to collect the best available and most up-to-date data to optimize the accuracy of the information used in the decision making process. The table below provides a detailed list of datasets which were used in the prioritization process. Each indicator was classified into one of three factors: Flood Risk, Needs, and Action Potential. These factors, as well as individual indicators, were incorporated into the algorithm after normalization by population or area weighting at the HUC-8 level. This is critical when comparing watersheds as it allows for a fair comparison between entities when population numbers and total areas are different from one to another. This evaluation is performed primarily at the HUC-8 level.



**Table 24: Datasets Used in the Prioritization Process**

Factor	Indicator	Source	Data Collected Date	Resolution	Notes
Flood Risk	AAL	FEMA National Discovery	June 2011	Nation-wide data on FIPS level	Not available for Alaska
	Population	FEMA	2010	Census blocks	
Needs	CNMS	FEMA (STARR)	Oct. 2010	Region-wide data on stream level	No Complete dataset for Alaska available
	Coastal Miles	FEMA		Borough/Census block	FY10 sequencing
	Topographic Coverage	State of Alaska FEMA	Nov. 2011 May, 2010	State-wide data on community level Nationwide data on community level.	
	Community Identified Needs	State of Alaska	Nov. 2011	State-wide data on community level	
	Climatologic Change	State of Alaska	Nov. 2011	State-wide data on community level	
	LOMCs	FEMA MSC	Nov 2011	State-wide data on lat., long level	
	Planned Future Development	State of Alaska	Nov. 2011	State-wide data on community level	
Action Potential	Mitigation Plans	State of Alaska FEMA	Nov. 2011 June, 2011	State-wide data on community level Nationwide data on community level	
	Interest in New Community Plans	State of Alaska	Nov. 2011	State-wide data on community level	
	CRS	FEMA CRS	Oct. 2011	Nationwide data on community level	
	Disaster Declarations	State of Alaska FEMA CRS	Nov. 2011 Aug. 2011	State-wide data on community level Nation-wide data on county level.	
	FIA	FEMA	Dec. 2009	Nationwide data on county level	
	Mitigation Grants	State of Alaska FEMA RSS	Nov. 2011 May. 2011	State-wide data on community level Nation-wide data on county level	
	In-House GIS	State of Alaska	Nov. 2011	State-wide data on community level	



## Data Processing

The different types of data provided lend themselves to inclusion in a prioritization algorithm in different ways. To prepare the tables, decisions must be made on data type and normalization method – keeping in mind a consistent ranking method. For the purposes of this analysis we will assume that the lower the rank (1 being the lowest) the more likely a unit (FIPS, CID, HUC) is to be recommended for study (meaning it is considered a higher priority by our system). Since the goal is to make prioritization recommendations, each data table should evaluate how one unit compares to another for the factor described by that data table to the extent possible.

### Area/Population Weighting

Depending on the resolution of the contributing datasets, each indicator was first ranked at a watershed (HUC-8), County (FIPS), or Community (CID) level. For factors that existed at a HUC-8 watershed level, the factor rankings transferred directly to the master ranking scheme. For factors ranked at the county or community level, the appropriate area or population weighting was applied to the data such that counties/communities with a large percentage of their respective area in a given watershed would contribute more to that watershed's eventual ranking for that factor than would the ranking of counties/communities which barely had a footprint in the watershed. The majority of the datasets used are available by political boundaries (CID or FIPS) rather than at the watershed level. The abovementioned method of ranking HUC-8 watersheds based on the area of “influence” of constituent counties/communities ensures that this transition from political boundaries to watershed boundaries is made in a meaningful manner without over- or under-representing the representative strength of the constituent counties/communities.

### Considering Types of Data Inclusion – Rank vs. Binary

The data sets which have been collected can contribute to a prioritization calculation in one of two ways; they can either be used to provide a relative ranking for each unit (FIPS or CID depending on the data), or they can provide a binary YES/NO (1/0) for each unit. An example of data lending itself to ranking would be the FIA data, where each unit has its own unique set of attributes (in that case rep loss, properties, etc.). An example of data lending itself to binary inclusion would be the Climate Change table, where each community listed simply as a YES/NO. Much of the locally collected data was processed as a binary data set including Planned Future Development, Topographic Coverage, Community Identified Needs, Mitigation Plans, Interest in New Community Plans, Mitigation Grants, In-House GIS, IAID, and Climatological Change.

## Risk Factor

### Average Annualized Loss Rank

The Average Annualized Loss (AAL) Rank is a ranking, by watershed, of the total AAL. This starts with a Rank of 1 being the watershed with the highest AAL dollar amount. However, no AAL data analysis was





available for Alaska to use on this project. Therefore, all the watersheds had the same ranking and no weighting factor is applied to this indicator. When the AAL data becomes available in the future, the indicator can be introduced to the algorithm. With proper weighting factor, AAL could contribute to the Risk factor.

### **Population Rank**

Population Rank rates the highest population with a value of 1 to indicate that it is the most important, and increases in order to the watershed of lowest population.

### **Needs Factor**

#### **Coordinated Needs Management Strategy (CNMS)**

This ranking uses the CNMS inventory to compare mileages within each watershed, which are considered Non-NVUE. New, Validated, or Updated Engineering (NVUE) is the FEMA standard that provides a basis for assessing the engineering analysis used to develop flood elevations. FEMA developed the standard to help mapping partners determine where new study data should be collected, where updates to existing flood hazard data should be performed, and whether previously developed flood study data could still be considered valid. The Non-NVUE category is composed of all paper inventory study miles, as well as any modernized NOT VALID and REQUIRES ASSESSMENT mileage. Higher priority can be given to watersheds with more mileage in this category. The CNMS data for Alaska currently shows that ALL stream miles are Non-NVUE compliant, thus all watersheds will have the same rank for this indicator. Additionally, FEMA's contractor STARR indicated that the only streams currently included in CNMS for the State of Alaska are those currently in DFIRM format. This excludes a large number of streams and makes this dataset incomplete. When the CNMS data is updated and some distinctions between the watersheds can be made, this indicator can be introduced to the algorithm at that time. Ultimately, CNMS should contribute heavily to the Needs factor.

#### **Coastal Miles**

Since the CNMS inventory only includes riverine mileages, a significant amount of coastal shoreline mileages within the state of Alaska are not considered. The Coastal Needs indicator addresses the needs of floodplain studies for coastal communities. The indicator ranks all watersheds based on the linear distance of coastline within a watershed as it relates to the overall area of coastal communities within the state. Higher priority is given to watersheds that include more coastal communities.

#### **Topographic Coverage Rank**

Topographic data availability was part of the FY11 algorithm and is considered here as an action potential. Here watersheds are ranked based on the percentage of their area that are covered by available topographic coverage (discounting the 30m resolution National Elevation Dataset- NED), with a Rank of 1 representing the watershed(s) with the highest percentage of topographic coverage. The base NED product was



discounted based on the National Academy's findings on floodplain analyses and quality elevation data and the associated applicability of this particular dataset.

### **Community Identified Needs Rank**

Community Identified Needs ranking is a weighted value representing the needs which were previously unidentified. Several communities have expressed the need for new or updated flood studies. Higher priority was given to communities that have identified such needs.

### **Climatological Change Rank**

This ranking utilizes local input to identify any significant climatological changes observed in a community. Several communities have reported hydrological impact caused by climatological changes, such as rising sea level, glacier recessions, flooding introduced by glacial dam breaches, melting of permafrost, etc.

This factor evaluates the relative area of a watershed where the impact of significant climatological changes was reported. The watersheds are ranked based on the percentage of their area with significant climatological changes.

### **LOMC Rank**

The Letters of Map Change (LOMC) ranking is a combined weighted value representing the presence and number of LOMCs within communities located in specific watersheds. Higher priority was given to watersheds including communities with greater numbers of processed LOMCs.

### **Planned Future Development Rank**

This ranking utilizes the local inputs to identify any planned future development in a community. It evaluates the area of planned future development within a watershed as it relates to the overall area within the State of Alaska. A rank of 1 indicates a watershed which has seen the highest percentage of area that has planned future development. This is considered a Need because the planned future development is an indicator of future urbanization where the new physical environment is no longer being represented appropriately in the engineering model and on the map.

### **Action Potential Factor**

#### **Mitigation Plan Rank**

The Mitigation Plan ranking is a weighted value indicating the presence of active mitigation plans within communities located in a watershed. Higher priority was given to those watersheds of which higher percentages of their respective areas included communities with mitigation plans in place.



### Interest in New Community Plans

The Interest in New Community Plans ranking is a weighted value indicating the willingness of communities to either update their plans or develop new community plans. Higher priority was given to watersheds of which higher percentages of their respective areas included communities with community plans in place.

### Community Rating System Rank

The Community Rating System (CRS) ranking is a combined weighted value representing the CRS rating of communities located in each of the watersheds. Higher priority was given to watersheds that included communities with a better overall CRS rating. In essence, communities that are more in compliance and have a better CRS rating will contribute positively to achieving the goals of Risk MAP.

### Disaster Declarations Rank

The Disaster Declarations ranking is a weighted value indicating the presence of communities within the watershed that have a history of declared flood disasters. Higher priority was given to watersheds that have more disaster declarations with the thought that communities that have had disasters declared are more likely to value and implement mitigation action to limit the scope of the impact in the future. It also provides a part of the outreach communications.

### Flood Insurance Administration Rank

The Flood Insurance Administration (FIA) ranking is a combined weighted value representing claims, policies, repetitive loss, and repetitive loss properties intersecting the watersheds using a per capita, per unit area normalization. Higher priority was given to watersheds that included communities with high occurrences of these factors per capita per unit area.

### Mitigation Grants Rank

The Grants ranking is a combined weighted value representing presence of ongoing/recent studies within the communities or portions thereof within each of the watersheds. Higher priority was given to areas receiving greater mitigation grants. This is based on the assumption that because these communities have received mitigation funding recently, they could be more likely to improve their communities in other ways.

### In-House GIS Rank

The In-House GIS ranking is an indicator of the community's capability to participate in the Risk MAP Program. A community with a strong in-house GIS program and proper supporting staff is more likely to carry out relevant aspects of the Risk MAP Program. Higher priority was given to watersheds, which have the higher percentages of their areas intersecting communities with a confirmed In-House GIS program.



## APPLICATION OF THE PRIORITIZATION AND FUTURE STUDIES SEQUENCING DECISION SUPPORT SYSTEM

The *Alaska\_Risk MAP\_Prioritization.xlsx* spreadsheet has eight tabs: Factor\_Weights, HUC-8\_Rankings, Scenarios, HUC\_Rank, HUC\_Summary, AK\_Master, State\_data\_Summary, and NFIP.

The “Factor\_Weights” tab allows the users to adjust the weighting factors based on community preferences. Initially, all editable fields (colored yellow) have been set to recommended weights. Users have the ability to evaluate the relative importance of three factors of Risk, Needs, and Action potential. In addition, users can adjust each indicator under subgroups if desired. Changing values in this tab will result in a new watershed prioritization within the ‘HUC-8\_Rankings’ Tab.

The “HUC-8\_Rankings” tab provides a summary of HUC-8 watershed’s prioritization based on the user-specified weighting factors that are shown in the “WorkSheet” tab.

The “Scenarios” tab allows the user to capture certain weighting factor scenarios and compares the prioritization results side-by-side. Four pre-rendered scenarios are provided. The four scenarios are titled: Typical, Need Heavy, Risk Heavy, and Action Heavy with the most weight applied to their respective primary factor. The watershed rankings are conditionally formatted to allow for quick identification of high priority watersheds and can be sorted in a variety of ways.

Scenarios can be added using the instructions found within the “Adding Scenarios” section of this report. Both the “HUC\_Summary” and “HUC\_Rank” tabs show the rolled up summary watershed scores and rank tables resulting from the “AK\_Master” analysis.

The “AK\_Master” worksheet contains both the results of the GIS intersection of the Watershed, Community, FEMA borough, and Census boundaries as well as all of the required data manipulations to produce the required indicator scores.

The “State\_Data\_Summary” worksheet contains the summary of the local data provided by those communities participating in the NFIP. It also contains the binary and relative ranking summary data for this local data used in the “AK\_Master” worksheet.

The “NFIP” worksheet summarizes the watershed rankings in relation to the NFIP participating community.



## Adding Scenarios

**Step 1:** Ensure that the HUC-8 data and their respective rankings are sorted in ascending order. Clicking the filter tab button will generate a popup that will allow sorting in ascending order.

**Step 1a) Click the Filter Button**

Scenario #	1	2	3	4	5
<b>Pre-Rendered Scenarios</b>					
Typical	Need Heavy	Risk Heavy	Action Heavy		
LOMC Rank Ranking Factor	29%	29%	29%	29%	
Future Development Ranking Factor	12%	12%	12%	12%	
<b>ACTION POTENTIAL Group</b>					
Mitigation Plans Ranking Factor	11%	11%	11%	11%	
Interest In New Plans Ranking Factor	11%	11%	11%	11%	
CRS Ranking Factor	26%	26%	26%	26%	
Declarations Ranking Factor	5%	5%	5%	5%	
FIA Ranking Factor	16%	16%	16%	16%	
Grants Ranking Factor	21%	21%	21%	21%	
In-House GIS Ranking Factor	5%	5%	5%	5%	

**Step 1b) Sort A to Z then click OK**

HUC-8	Watershed Name	Scenario 1	Scenario 2	Scenario	Scenario 4
19010101	and	61	39	91	78
19010102		11	7	12	48
19010103		48	44	27	114
19010106	and Canal	120	125	99	126
19010107	inal	113	95	126	116
19010201		36	17	71	44
19010202	itkof-Etolin-Zarembo-Wrangell	21	18	16	46
19010203	f Islands	13	15	14	29
19010204		63	61	54	74
		132	131	132	130
		10	13	8	28
		112	124	79	120





**Step 2 and 3)** Adjust the weighting factors and copy them into the Scenario's work-tab to identify the weighting scheme for this particular scenario.

Use Tier 1 Adjustments below if you desire shift the influence of each factor around.

**Tier 1 Ranking Factors Weights Adjustment**

Rate the following On a scale on 1-10 of relative importance between the 3 subgroups of Risk, Needs and Action Potential. Ratings directly translate to relative weights.

Factor	Suggested Weight Rating (1-10; 10 is heaviest weight)	User: Select Weights Below	Effective Percentage Weights used in calculations
RISK	6	3	30%
NEEDS	10	5	50%
ACTION POTENTIAL	4	2	20%

Use Tier 2 Adjustments below if you desire to further refine the weighting of ranks within each factor's sub-group.

**Tier 2 Ranking Factor Weights Adjustment (optional)**

Rate the following On a scale on 1-10 of relative importance within each subgroup of Risk, Needs and Action Potential. Think of the total within each subgroup as a score. The rating number assigned to each factor the weight around 2000 in the effective weighting % shown in the side in Column D.

Note: For a description of the ranks below, please see documentation provided along with this spreadsheet.

Sub-factors	Suggested Weight Rating (1-10; 10 is heaviest weight)	User: Select Weights Below	Effective Percentage Weights used in calculations
<b>RISK Group</b>			
AAL Ranking Factor	8	0	0%
Population Ranking Factor	5	5	100%
<b>NEEDS Group</b>			
CMMS Ranking Factor	8	0	0%
Coastal Needs Ranking Factor	6	6	26%
Topo Coverage Rank Ranking Factor	6	6	26%
Community identified needs Ranking Factor	2	2	3%
Climate Change Ranking Factor	2	2	3%
LOMC Rank Ranking Factor	5	5	22%
Planned Future Development Ranking Factor	2	2	3%
<b>ACTION POTENTIAL Group</b>			
Mitigation Plans Ranking Factor	4	4	10%
Interest in New Plans Ranking Factor	4	4	10%
CRS Ranking Factor	10	10	26%
Declarations Ranking Factor	2	2	6%
FIA Ranking Factor	6	6	17%
Grants Ranking Factor	8	8	22%
In-House GIS Ranking Factor	2	2	6%

Step 2a) Adjust User Selected Weights to the desired weighting scheme (yellow cells)

Step 2b) Copy User Selected Weights for input into Scenario's Tab

	A	B	C	D	E	F	G	H
1		Scenario #	1	2	3	4	5	6
2			Pre-Rendered Scenarios					
3			Typical	Need Heavy	Risk Heavy	Action Heavy		
4		RISK	3	1	7	1		
5		NEEDS	5	8	2	2		
6		ACTION POTENTIAL	2	1	1	7		
7								
8		RISK Group						
9		AAL Ranking Factor		0	0	0		
10		Population Ranking Factor		5	5	5		
11								
12		NEEDS Group						
13		CMMS Ranking Factor		0	0	0		
14		Coastal Needs Ranking Factor		6	6	6		
15		Topo Coverage Rank Ranking Factor		6	6	6		
16		Community identified needs Ranking Factor		2	2	2		
17		Climate Change Ranking Factor		2	2	2		
18		LOMC Rank Ranking Factor		5	5	5		
19		Planned Future Development Ranking Factor		2	2	2		
20								
21		ACTION POTENTIAL Group						
22		Mitigation Plans Ranking Factor		4	4	4		
23		Interest in New Plans Ranking Factor		4	4	4		
24		CRS Ranking Factor		10	10	10		
25		Declarations Ranking Factor		2	2	2		
26		FIA Ranking Factor		6	6	6		
27		Grants Ranking Factor		8	8	8		
28		In-House GIS Ranking Factor		2	2	2		
29								
30								
31	HUC-8	Watershed Name	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
32	19010101	Southeast Mainland	61	39	91	78		
33	19010102	Ketchikan	11	7	12	48		
34	19010103	Prince of Wales	48	44	27	114		
35	19010106	Headwaters Portland Canal	120	125	99	126		
36	19010107	Outlet Portland Canal	113	95	126	116		
37	19010201	Mainland	36	17	71	44		
38	19010202	Kulu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21	18	16	46		
39	19010203	Baranof-Chichagof Islands	13	15	14	29		
40	19010204	Admiralty Island	63	61	54	74		
41	19010205	Lower Iskut	132	131	132	130		
42	19010201	Ivvik Canal	10	14	8	36		

Step 3) Paste the weightings into the appropriate Scenario column for documentation and comparison



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**Step 4 and 5)** Select and copy the watershed rankings then paste them into the Scenario worktab. Once pasted in, the results will be color coded according to the ranking. Sorting is performed by pressing the filter button and sorting as desired.

	A	B	C	D
1	1	2	3	4
2	HUC8 Composite			
3	HUC8_Key	HUC8 Name	HUC8 Composite Ranking factor	HUC8 Composite Rank (Dynamic)
4				
5				
6				
121	19050203	Buckland River	81.6	76
122	19050301	Selawik Lake	50.9	45
123	19050302	Upper Kobuk River	78.8	74
124	19050303	Middle Kobuk River	72.7	67
125	19050304	Lower Kobuk River	83	79
126	19050401	Upper Noatak River	95.1	103
127	19050402	Middle Noatak River	107.6	117
128	19050403	Lower Noatak River	48.7	42
129	19050404	Wulik-Kivalina Rivers	93	96
130	19050405	Lisburne Peninsula	94.6	101
131	19050500	Kotzebue Sound	140.3	144
132	19060101	Kukpowruk River	111.3	123
133	19060102	Kokolik River	118.6	132
134	19060103	Utukok River	94.9	102
135	19060201	Kuk River	98.9	112

Step 4) Within the HUC8\_Rankings work-tab, select and copy cells D7:D150. This represents this particular scenario's rankings.

	A	B	C	D	E	F	G	H
1		Scenario #	1	2	3	4	5	
2		Pre-Rendered Scenarios						
3		Typical	Need Heavy	Risk Heavy	Action Heavy			
24		CRS Ranking Factor	10	10	10	10		
25		Declarations Ranking Factor	2	2	2	2		
26		FIA Ranking Factor	6	6	6	6		
27		Grants Ranking Factor	8	8	8	8		
28		In-House GIS Ranking Factor	2	2	2	2		
29								
30								
31	HUC-8	Watershed Name	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
32	19010101	Southeast Mainland	61	11	48	120	113	36
33	19010102	Ketchikan	11	48	120	113	36	21
34	19010103	Prince of Wales	48	120	113	36	21	13
35	19010106	Headwaters Portland Canal	120	113	36	21	13	63
36	19010107	Outlet Portland Canal	113	36	21	13	63	132
37	19010201	Mainland	36	21	13	63	132	10
38	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21	13	63	132	10	112
39	19010203	Baranof-Chichagof Islands	13	63	132	10	112	20
40	19010204	Admiralty Island	63	132	10	112	20	
41	19010205	Lower Iskut	132	10	112	20		
42	19010301	Lynn Canal	10	112	20			
43	19010302	Glacier Bay	112	20				
44	19010303	Chilkat-Skagway Rivers	20					

Step 5a) Paste into the appropriate column for comparison to other scenarios.

Step 5b) Sort as desired by pressing the appropriate Filter Button, then press OK.



## PRIORITIZATION OF FUTURE MAPPING NEEDS

The focus of this work is to provide a baseline for prioritizing future study needs of Alaska's NFIP participating communities. The data collection and analysis results indicate that the Upper Kenai Peninsula (HUC 19020302) should be considered a high priority. The overall ranking for this watershed was insensitive to the weighting distribution scenarios that were tested. Adjacent watersheds also had high prioritization rankings.

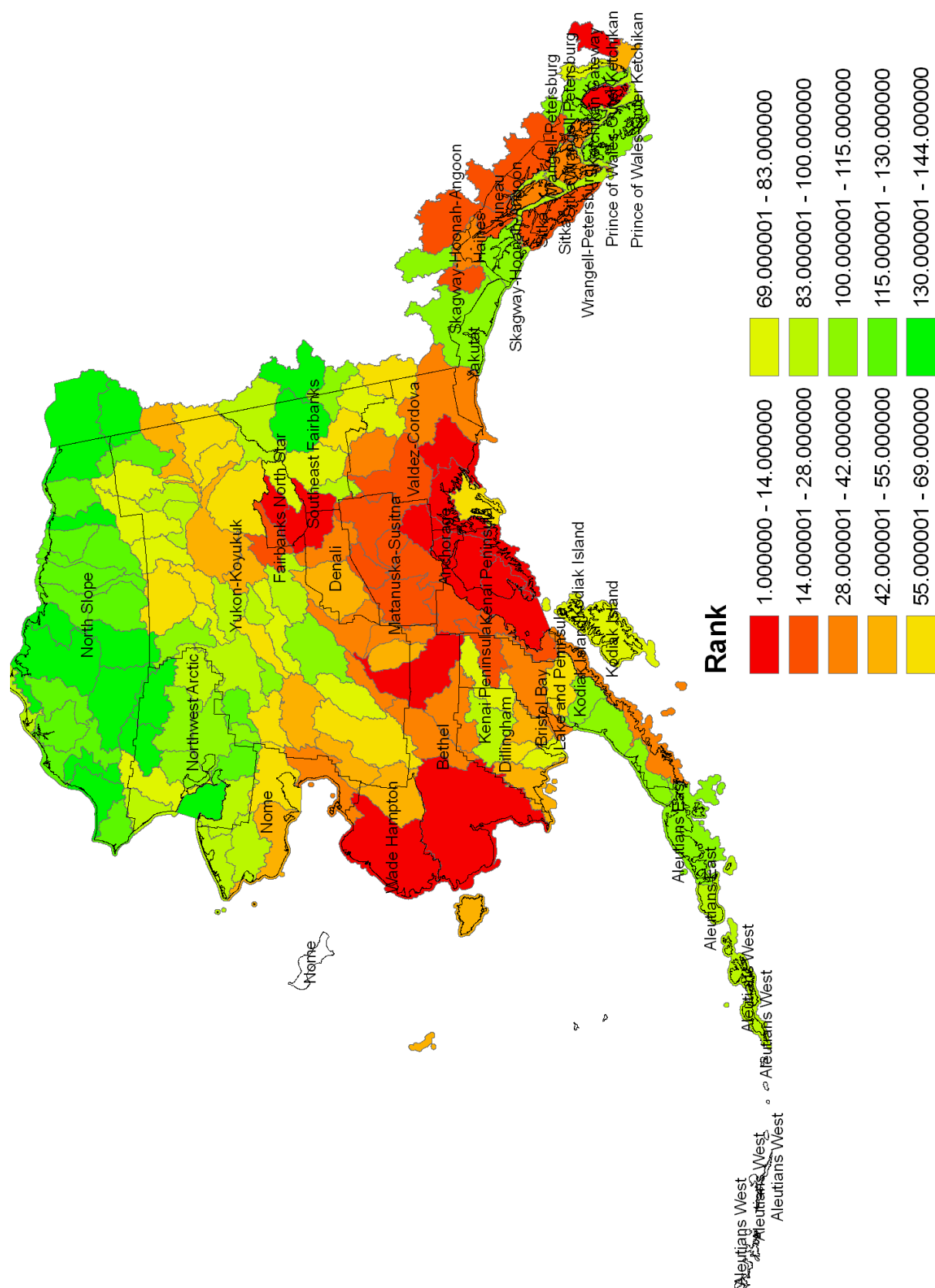
The NFIP communities that are located in these high prioritized watersheds include Kenai Peninsula Borough, City of Kenai, Municipality of Anchorage, City of Soldotna, City of Aniak, City of Bethel, City of Kwethluk, City of Emmonak, City of Cordova, and the Matanuska-Susitna Borough. The prioritized rankings are illustrated by the map in Figure 21, next page, and by Table 26 on pages 92 and 93. Table 27 on pages 94-95 provides a listing of NFIP-participating communities by ranked HUC-8 watershed.

In general, the watershed rankings show that the South Central Alaska portions (Anchorage, and Matanuska-Susitna Boroughs) should be given higher priority. The coastal areas for these boroughs as well as the Western Alaska coastal areas (including Bethel and Wade Hampton) also need focused Risk MAP studies.

Completing the CNMS analysis is critical to accomplishing future analysis or updates to this activity. The current CNMS indicator for Alaska currently shows all watersheds will have the same rank. When the CNMS data is updated and some distinctions between the watersheds can be made, this indicator can be introduced to the algorithm at that time. Ultimately, CNMS should contribute heavily to the Needs Factor.

Also, a statewide risk analysis needs to be performed. The risk analysis will define the average annualized losses. When the AAL data becomes available in the future, the indicator can be introduced to the algorithm. With proper weighting factor, AAL could contribute to the Risk factor.

**Figure 35: Map of Rankings of Watersheds Based on Scenario 1**



**Table 25: Ranking of Alaska's HUC-8 Watersheds Based on Scenarios 1-4**

HUC-8	Watershed Name	Scenario 1	Scenario 2	Scenario 3	Scenario 4
19020302	Upper Kenai Peninsula	1	1	1	1
19030502	Kuskokwim Delta	2	4	3	3
19040805	Yukon Delta	3	2	6	6
19020201	Eastern Prince William Sound	4	3	9	2
19020301	Lower Kenai Peninsula	5	6	4	5
19020202	Western Prince William Sound	6	5	13	7
19020401	Anchorage	7	14	2	4
19020402	Matanuska	8	19	4	8
19020102	Middle Copper River	9	8	18	9
19010301	Lynn Canal	10	13	8	26
19010102	Ketchikan	11	7	12	48
19020104	Lower Copper River	12	9	24	10
19010203	Baranof-Chichagof Islands	13	15	14	29
19050104	Nome	14	16	17	24
19040506	Chena River	15	30	7	17
19040507	Tanana Flats	16	29	11	13
19030405	Stony River	17	12	33	12
19040804	Anvikto Pilot Station	18	20	22	18
19020601	Redoubt-Trading Bays	19	11	38	10
19010303	Chilkat-Sitka Rivers	20	10	20	58
19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21	18	16	46
19020505	Lower Susitna River	22	37	10	16
19050102	Unaalakleet	23	24	23	36
19020701	Kodiak-Afognak Islands	24	32	15	40
19020702	Shelikof Strait	25	22	43	21
19030206	Lake Iliamna	26	26	31	43
19030205	Lake Clark	27	25	42	26
19020101	Upper Copper River	28	27	37	22
19050201	Shishmaref	29	33	31	35
19020800	Cook Inlet	30	35	26	33
99999999	N/A	31	34	25	57
19010402	Bering Glacier	32	23	65	15
19040509	Tolovana River	32	47	19	23
19030501	Aniak	34	28	50	30
19030102	Fox Islands	34	34	21	75
19020802	Tuxedni-Kamishak Bays	35	21	85	14
19010201	Mainland	36	17	71	44
19050103	Norton Bay	36	42	41	45
19040501	Nebesna - Chisana Rivers	39	41	54	32
19010304	Taku River	40	31	62	46
19040508	Nemna River	40	49	29	53
19050403	Lower Noatak River	42	51	26	63
19020501	Upper Susitna River	43	39	66	19
19050105	Imuruk Basin	43	46	45	55
19030101	Cold Bay	45	42	29	100
19050301	Selawik Lake	45	48	36	58
19020504	Yentna River	47	43	76	20
19040403	Yukon Flats	47	60	40	27
19010103	Prince of Wales	48	44	27	114
19030305	Togiak	50	56	36	61
19040705	Galeana	50	67	35	25
19030204	Naknek	52	48	41	80
19040505	Sakha River	52	53	58	34
19030404	Holitra River	54	37	96	50
19030407	South Fork Kuskokwim River	55	52	72	51
19020503	Talkeetna River	56	55	67	41
19040601	Upper Koyukuk River	56	66	56	39
19020502	Chulitna River	57	54	84	37
19040803	Lower Innoko River	59	59	81	30
19040801	Anvik River	59	61	62	54
19010101	Southeast Mainland	61	39	91	78
19030303	Lower Nushagak River	61	68	33	87
19010401	Yakutat Bay	62	53	51	119
19010204	Admiralty Island	63	61	54	74
19040608	Koyukuk Flats	65	76	61	42
19040302	East Fork Chandalar River	66	65	76	67
19050303	Middle Kobuk River	67	75	59	77
19060402	Sagavanirktok River	68	70	54	111
19030201	Port Heiden	69	57	81	118
19040402	Birch-Beaver Creeks	69	83	72	38
19040205	Porcupine Flats	70	73	95	52





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(continued) Table 25: Ranking of Alaska's HUC-8 Watersheds Based on Scenarios 1-4

HUC-8	Watershed Name	Scenario 1	Scenario 2	Scenario 3	Scenario 4
19060401	Kuparuk River	72	82	46	115
19060202	Good hope-Spafarief Bay	73	72	84	74
19060302	Upper Kobuk River	74	79	79	71
19030202	Ugashik Bay	75	70	89	106
19030503	Nureval-St.Matthew Islands	75	81	78	72
19060203	Buckland River	76	90	68	85
19040511	Lower Tanana River	77	92	77	60
19030401	North Fork Kuskokwim River	78	81	98	55
19060304	Lower Kobuk River	79	99	52	91
19040504	Delta River	80	103	51	89
19060304	Lower Colville River	82	88	63	122
19040203	Sheenjek River	83	78	109	64
19040502	Tok	84	110	49	92
19060204	Ikpilpuk River	85	64	113	113
19060303	Chandler-Anaktuvuk Rivers	86	0	103	114
19040204	Black River	87	96	97	61
19030304	Wood River	87	104	57	109
19040702	Nowitna River	88	91	106	49
19060203	Meade River	89	87	82	123
19030301	Upper Nushagak River	89	90	82	101
19060301	Upper Colville River	90	62	125	109
19040101	White River	91	84	111	69
19030306	Nushagak Bay	92	106	60	110
19030302	Mukhatna River	93	76	105	105
19040704	Ramparts to Ruby	93	116	74	66
19060302	Kilik River	95	68	129	103
19060404	Wulik-Kivalina Rivers	96	113	67	105
19040202	Coleen River	99	89	116	68
19060502	Camden Bay	100	95	85	132
19060405	Liburne Peninsula	101	108	65	130
19030203	Egegik Bay	102	91	94	115
19060103	Utukok River	102	93	93	131
19060401	Upper Noatak River	103	85	124	90
19040503	Healy Lake	104	126	48	104
19060503	Beaufort Lagoon	105	77	123	116
19040401	Eagle Circle	105	115	88	80
19020203	Prince William Sound	106	100	95	94
19060202	Northwest Coast	107	122	47	136
19030403	Takotna River	108	106	101	79
19040301	Middle Fork-North Fork Chandalar Rivers	110	100	108	87
19040802	Upper Innoko River	111	105	115	65
19060201	Kuk River	112	94	102	128
19010302	Glacier Bay	112	124	79	120
19010107	Cutlet Portland Canal	113	95	126	116
19030406	Middle Fork Kuskokwim River	114	104	119	69
19040605	Alalakaket	115	128	92	100
19040404	Ramparts	116	121	107	82
19060402	Middle Noatak River	117	101	132	108
19040304	Lower Chandalar River	118	127	98	98
19060403	Mikileton Bay	120	110	110	137
19010106	Headwaters Portland Canal	120	125	99	126
19040603	Alatina River	122	118	130	73
19060101	Kukpowruk River	123	108	122	135
19040206	Grass River	124	119	127	86
19040609	Kattee I River	125	123	128	83
19040602	South Fork Koyukuk River	126	131	121	97
19040604	Kanuti River	127	124	136	84
19060501	Canning River	128	117	118	139
19040510	Kamtishna River	130	135	114	94
19040703	Melkeitna River	131	130	133	93
19060102	Kokolik River	132	125	116	140
19010205	Lower Iskut	132	131	132	130
19040303	Christian River	133	132	134	96
19010500	Icy Strait-Chatham Strait	133	133	134	133
19040606	Huslia River	134	129	137	99
19040607	Dulbi River	135	137	131	118
19060205	Harrison Bay	136	120	139	141
19040104	Forty Mile River	137	139	120	129
19040701	Tozitna River	138	136	140	117
19040102	Ladue River	139	141	126	134
19040201	Old Crow River	140	138	138	127
19040103	Sixty Mile River	143	144	142	143
19060500	Kotzebue Sound	144	143	144	144



Table 26: NFIP-Participating Communities by Ranked HUC-8 Watershed

NFIP PARTICIPATING COMMUNITY	FIPS	CID	HUC_8	Watershed Name	Rank
Kenai Peninsula Borough	02122	02122X	19020302	Upper Kenai Peninsula	1
Kenai, City of	02122	020126	19020302	Upper Kenai Peninsula	1
Municipality of Anchorage	02020	020005	19020302	Upper Kenai Peninsula	1
Soldotna, City of	02122	020014	19020302	Upper Kenai Peninsula	1
Aniak, City of	02050	020033	19030502	Kuskokwim Delta	2
Bethel, City of	02050	020104	19030502	Kuskokwim Delta	2
Kwethluk, City of	02050	020130	19030502	Kuskokwim Delta	2
Emmonak, City of	02270	020125	19040805	Yukon Delta	3
Cordova, City of	02261	020037	19020201	Eastern Prince William Sound	4
Kenai Peninsula Borough	02122	02122X	19020201	Eastern Prince William Sound	4
Matanuska-Susitna, Borough of	02170	02170X	19020201	Eastern Prince William Sound	4
Municipality of Anchorage	02020	020005	19020201	Eastern Prince William Sound	4
Valdez, City of	02261	020094	19020201	Eastern Prince William Sound	4
Homer, City of	02122	020107	19020301	Lower Kenai Peninsula	5
Kenai Peninsula Borough	02122	02122X	19020301	Lower Kenai Peninsula	5
Kenai Peninsula Borough	02122	02122X	19020202	Western Prince William Sound	6
Seward, City of	02122	020113	19020202	Western Prince William Sound	6
Matanuska-Susitna, Borough of	02170	02170X	19020401	Anchorage	7
Municipality of Anchorage	02020	020005	19020401	Anchorage	7
Matanuska-Susitna, Borough of	02170	02170X	19020402	Matanuska	8
Municipality of Anchorage	02020	020005	19020402	Matanuska	8
Municipality of Anchorage	02170	020005	19020402	Matanuska	8
Matanuska-Susitna, Borough of	02170	02170X	19020102	Middle Copper River	9
City & Borough of Juneau	02110	02110X	19010301	Lynn Canal	10
Haines Borough	02100	02100X	19010301	Lynn Canal	10
Ketchikan Gateway Borough	02130	02130X	19010102	Ketchikan	11
Ketchikan Gateway Borough	02130	02130X	19010102	Ketchikan	11
Cordova, City of	02261	020037	19020104	Lower Copper River	12
City & Borough of Sitka	02220	02220X	19010203	Baranof-Chichagof Islands	13
City & Borough of Sitka	02280	02195X	19010203	Baranof-Chichagof Islands	13
Hoonah, City of	02105	020049	19010203	Baranof-Chichagof Islands	13
Wrangell City & Borough	02280	02195X	19010203	Baranof-Chichagof Islands	13
Nome, City of	02180	020069	19050104	Nome	14
Fairbanks North Star Borough	02090	02090X	19040506	Chena River	15
Fairbanks North Star Borough	02090	02090X	19040507	Tanana Flats	16
Nenana, City of	02290	025010	19040507	Tanana Flats	16
Kenai Peninsula Borough	02122	02122X	19030405	Stony River	17
Lake and Peninsula Borough	02164	02164X	19030405	Stony River	17
McGrath, City of	02290	020128	19030405	Stony River	17
Kenai Peninsula Borough	02122	02122X	19020601	Redoubt-Trading Bays	19
Lake and Peninsula Borough	02164	02164X	19020601	Redoubt-Trading Bays	19
Matanuska-Susitna, Borough of	02122	02122X	19020601	Redoubt-Trading Bays	19
Matanuska-Susitna, Borough of	02170	02170X	19020601	Redoubt-Trading Bays	19
Haines Borough	02100	02100X	19010303	Chilkat-Skagway Rivers	20
Municipality of Skagway	02232	025011	19010303	Chilkat-Skagway Rivers	20
Petersburg, City of	02280	020074	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	02280	020098	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	02280	02195X	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	02280	02275X	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	02280	02280X	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Matanuska-Susitna, Borough of	02170	02170X	19020505	Lower Susitna River	22
Kenai Peninsula Borough	02122	02122X	19020702	Shelikof Strait	25
Lake and Peninsula Borough	02164	02164X	19020702	Shelikof Strait	25
Kenai Peninsula Borough	02122	02122X	19030206	Lake Iliamna	26
Lake and Peninsula Borough	02164	02164X	19030206	Lake Iliamna	26
Kenai Peninsula Borough	02122	02122X	19030205	Lake Clark	27
Lake and Peninsula Borough	02164	02164X	19030205	Lake Clark	27
Northwest Arctic Borough	02188	02188X	19050201	Shishmaref	29
Shishmaref, City of	02180	020084	19050201	Shishmaref	29
Homer, City of	02122	020107	19020800	Cook Inlet	30
Kenai Peninsula Borough	02122	02122X	19020800	Cook Inlet	30
Kenai, City of	02122	020126	19020800	Cook Inlet	30
Matanuska-Susitna, Borough of	02170	02170X	19020800	Cook Inlet	30
Municipality of Anchorage	02020	020005	19020800	Cook Inlet	30
Fairbanks North Star Borough	02090	02090X	19040509	Tolovana River	32
Aniak, City of	02050	020033	19030501	Aniak	34
Kenai Peninsula Borough	02122	02122X	19020602	Tuxdeni-Kamishak Bays	35
Lake and Peninsula Borough	02164	02164X	19020602	Tuxdeni-Kamishak Bays	35
City & Borough of Juneau	02110	02110X	19010201	Mainland	36
Wrangell City & Borough	02280	020098	19010201	Mainland	36
Wrangell City & Borough	02280	02280X	19010201	Mainland	36
Northwest Arctic Borough	02188	02188X	19050103	Norton Bay	38
City & Borough of Juneau	02110	02110X	19010304	Taku River	40
Matanuska-Susitna, Borough of	02170	02170X	19040508	Nenana River	40
Nenana, City of	02290	025010	19040508	Nenana River	40
Kotzebue, City of	02188	020059	19050403	Lower Noatak River	42
Northwest Arctic Borough	02188	02188X	19050403	Lower Noatak River	42
Matanuska-Susitna, Borough of	02170	02170X	19020501	Upper Susitna River	43
Northwest Arctic Borough	02188	02188X	19050105	Imuruk Basin	43
Lake and Peninsula Borough	02164	02164X	19030101	Cold Bay	45
Northwest Arctic Borough	02188	02188X	19050301	Selawik Lake	45



## Alaska Mapping Business Plan

Integrating Mapping, Risk Assessment, and Resilience Planning

(continued) Table 26: NFIP-Participating Communities by Ranked HUC-8 Watershed

NFIP PARTICIPATING COMMUNITY	FIPS	CID	HUC_8	Watershed Name	Rank
Fort Yukon, City of	02290	020045	19040403	Yukon Flats	47
Kenai Peninsula Borough	02122	02122X	19020504	Yentna River	47
Matanuska-Susitna, Borough of	02170	02170X	19020504	Yentna River	47
Galena, City of	02290	020124	19040705	Galena	50
Koyukuk, City of	02290	020127	19040705	Galena	50
Togiak, City of	02070	020090	19030305	Togiak	50
Fairbanks North Star Borough	02090	02090X	19040505	Salcha River	52
Kenai Peninsula Borough	02122	02122X	19030204	Naknek	52
Lake and Peninsula Borough	02164	02164X	19030204	Naknek	52
Lake and Peninsula Borough	02164	02164X	19030404	Holitsna River	54
Matanuska-Susitna, Borough of	02170	02170X	19030407	South Fork Kuskokwim River	55
Matanuska-Susitna, Borough of	02170	02170X	19020503	Talkeetna River	56
Matanuska-Susitna, Borough of	02170	02170X	19020502	Chulitna River	57
Dillingham, City of	02070	020041	19030303	Lower Nushagak River	61
Ketchikan Gateway Borough	02130	02130X	19010101	Southeast Mainland	61
Ketchikan Gateway Borough	02280	02275X	19010101	Southeast Mainland	61
Lake and Peninsula Borough	02164	02164X	19030303	Lower Nushagak River	61
Wrangell City & Borough	02280	020098	19010101	Southeast Mainland	61
Wrangell City & Borough	02130	02130X	19010101	Southeast Mainland	61
Wrangell City & Borough	02280	02275X	19010101	Southeast Mainland	61
Wrangell City & Borough	02280	02280X	19010101	Southeast Mainland	61
City & Borough of Juneau	02110	02110X	19010204	Admiralty Island	63
City & Borough of Juneau	02110	02110X	19010204	Admiralty Island	63
Northwest Arctic Borough	02188	02188X	19040608	Koyukuk Flats	65
Northwest Arctic Borough	02188	02188X	19050303	Middle Kobuk River	67
Fairbanks North Star Borough	02090	02090X	19040402	Birch-Beaver Creeks	69
Lake and Peninsula Borough	02164	02164X	19030201	Port Heiden	69
Fort Yukon, City of	02290	020045	19040205	Porcupine Flats	70
Northwest Arctic Borough	02188	02188X	19050202	Goodhope-Spafarief Bay	73
Northwest Arctic Borough	02188	02188X	19050302	Upper Kobuk River	74
Lake and Peninsula Borough	02164	02164X	19030202	Ugashik Bay	75
Northwest Arctic Borough	02188	02188X	19050203	Buckland River	76
Nenana, City of	02290	025010	19040511	Lower Tanana River	77
Matanuska-Susitna, Borough of	02170	02170X	19030401	North Fork Kuskokwim River	78
Northwest Arctic Borough	02188	02188X	19050304	Lower Kobuk River	79
Delta Junction, City of	02240	020040	19040504	Delta River	80
Matanuska-Susitna, Borough of	02170	02170X	19040504	Delta River	80
Dillingham, City of	02070	020041	19030304	Wood River	87
Northwest Arctic Borough	02188	02188X	19060301	Upper Colville River	90
Dillingham, City of	02070	020041	19030306	Nushagak Bay	92
Lake and Peninsula Borough	02164	02164X	19030302	Mulchatna River	93
Northwest Arctic Borough	02188	02188X	19050404	Wulik-Kivalina Rivers	96
Northwest Arctic Borough	02188	02188X	19050405	Lisburne Peninsula	101
Lake and Peninsula Borough	02164	02164X	19030203	Egegik Bay	102
Northwest Arctic Borough	02188	02188X	19050401	Upper Noatak River	103
Delta Junction, City of	02240	020040	19040503	Healy Lake	104
Fairbanks North Star Borough	02090	02090X	19040503	Healy Lake	104
Fairbanks North Star Borough	02090	02090X	19040401	Eagle to Circle	105
Kenai Peninsula Borough	02122	02122X	19020203	Prince William Sound	106
McGrath, City of	02290	020128	19030403	Takotna River	108
Haines Borough	02100	02100X	19010302	Glacier Bay	112
Ketchikan Gateway Borough	02130	02130X	19010107	Outlet Portland Canal	113
Northwest Arctic Borough	02188	02188X	19050402	Middle Noatak River	117
Ketchikan Gateway Borough	02130	02130X	19010106	Headwaters Portland Canal	120
Northwest Arctic Borough	02188	02188X	19040603	Alatna River	122
Fort Yukon, City of	02290	020045	19040206	Grass River	124
Wrangell City & Borough	02280	02280X	19010205	Lower Iskut	132
Wrangell City & Borough	02280	020098	19010500	Icy Strait-Chatham Strait	133
Wrangell City & Borough	02280	02280X	19010500	Icy Strait-Chatham Strait	133
Northwest Arctic Borough	02188	02188X	19040606	Huslia River	134
Northwest Arctic Borough	02188	02188X	19050500	Kotzebue Sound	144



## CHAPTER EIGHT: RISK MAP STUDY RECOMMENDATIONS

Each year the State of Alaska is asked to provide FEMA with an updated list of the priority ten Alaskan watersheds recommended for study under FEMA’s Risk MAP Program in the next fiscal year. *The Alaska Prioritization and Future Studies Sequencing Decision Support System* was developed to provide a defensible and fair prioritization of Alaskan watersheds containing NFIP-participating communities.

As discussed in the section on *Assisting Imminently-Threatened Alaska Native Villages*, prioritization of these communities will be based on an *Alaska Statewide Threat Assessment* being developed by the Denali Commission in coordination with the U.S. Army Corps of Engineers Alaska District and Cold Regions Research and Engineering Laboratory, and the University of Alaska Fairbanks. Because this effort won’t be completed until summer 2018, identification of the priority watersheds with these communities will not take place until the next update of the Alaska Mapping Business Plan in September 2018.

The table on the next two pages (pages 136-37) lists the top-ranked 50 watersheds based on the prioritization tool. Highlighted watersheds are those that have already been selected for Risk MAP studies, or are part of local jurisdictions which have recently undergone mapping studies. Most of the NFIP-participating communities within these watersheds have received flood studies, however there are a number of other hazards significantly impacting many of these communities requiring additional study and analysis. For FY18, the State’s priorities include several of these studies which will assist communities in meeting their resilience goals. A new set of priorities will be identified for FY19 based on the results of the *Alaska Statewide Threat Assessment*.

**Table 27: Priority Watersheds for Risk MAP Studies in 2017-18**

#	HUC-8 Watershed	NFIP Participating Jurisdiction	Proposed Project(s)
1	19010301 Lynn Canal	City and Borough of Juneau	Landslide Hazard Assessment
2	19020201 East Prince William Sound	City of Valdez	Landslide Hazard Assessment; Avalanche Hazard Map; Glacial Lake Outburst Food Hazard Map;
3	19020201 East Prince William Sound	City of Cordova	Landslide Hazard Assessment; Avalanche Hazard Map
4	19050104 Nome	City of Nome	Shoreline Change Map; Inundation Map
5	19050403 Lower Noatak River	City of Kotzebue	Shoreline Change Map; Inundation Map



**Table 28: NFIP Communities Located in the Fifty Highest-Ranked Watersheds**

NFIP PARTICIPATING COMMUNITY	HUC_8	Watershed Name	Rank
Kenai Peninsula Borough	19020302	Upper Kenai Peninsula	1
Kenai, City of	19020302	Upper Kenai Peninsula	1
Municipality of Anchorage	19020302	Upper Kenai Peninsula	1
Soldotna, City of	19020302	Upper Kenai Peninsula	1
Aniak, City of	19030502	Kuskokwim Delta	2
Bethel, City of	19030502	Kuskokwim Delta	2
Kwethluk, City of	19030502	Kuskokwim Delta	2
Emmonak, City of	19040805	Yukon Delta	3
Cordova, City of	19020201	Eastern Prince William Sound	4
Kenai Peninsula Borough	19020201	Eastern Prince William Sound	4
Matanuska-Susitna, Borough of	19020201	Eastern Prince William Sound	4
Municipality of Anchorage	19020201	Eastern Prince William Sound	4
Valdez, City of	19020201	Eastern Prince William Sound	4
Homer, City of	19020301	Lower Kenai Peninsula	5
Kenai Peninsula Borough	19020301	Lower Kenai Peninsula	5
Kenai Peninsula Borough	19020202	Western Prince William Sound	6
Seward, City of	19020202	Western Prince William Sound	6
Matanuska-Susitna, Borough of	19020401	Anchorage	7
Municipality of Anchorage	19020401	Anchorage	7
Matanuska-Susitna, Borough of	19020402	Matanuska	8
Municipality of Anchorage	19020402	Matanuska	8
Municipality of Anchorage	19020402	Matanuska	8
Matanuska-Susitna, Borough of	19020102	Middle Copper River	9
City & Borough of Juneau	19010301	Lynn Canal	10
Haines Borough	19010301	Lynn Canal	10
Ketchikan Gateway Borough	19010102	Ketchikan	11
Ketchikan Gateway Borough	19010102	Ketchikan	11
Cordova, City of	19020104	Lower Copper River	12
City & Borough of Sitka	19010203	Baranof-Chichagof Islands	13
City & Borough of Sitka	19010203	Baranof-Chichagof Islands	13
Hoonah, City of	19010203	Baranof-Chichagof Islands	13
Wrangell City & Borough	19010203	Baranof-Chichagof Islands	13
Nome, City of	19050104	Nome	14
Fairbanks North Star Borough	19040506	Chena River	15
Fairbanks North Star Borough	19040507	Tanana Flats	16
Nenana, City of	19040507	Tanana Flats	16
Kenai Peninsula Borough	19030405	Stony River	17
Lake and Peninsula Borough	19030405	Stony River	17
McGrath, City of	19030405	Stony River	17
Kenai Peninsula Borough	19020601	Redoubt-Trading Bays	19
Lake and Peninsula Borough	19020601	Redoubt-Trading Bays	19
Matanuska-Susitna, Borough of	19020601	Redoubt-Trading Bays	19
Matanuska-Susitna, Borough of	19020601	Redoubt-Trading Bays	19

\* Communities high-lighted in yellow have already been selected for Risk MAP Studies. Communities high-lighted in peach/tan are suspended communities which don't participate in the NFIP.



**Table 28, continued: NFIP Communities Located in the Fifty Highest-Ranked Watersheds**

NFIP PARTICIPATING COMMUNITY	HUC_8	Watershed Name	Rank
Haines Borough	19010303	Chilkat-Skagway Rivers	20
Municipality of Skagway	19010303	Chilkat-Skagway Rivers	20
Petersburg, City of	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Wrangell City & Borough	19010202	Kuiu-Kupreanof-Mitkof-Etolin-Zarembo-Wrangell	21
Matanuska-Susitna, Borough of	19020505	Lower Susitna River	22
Kenai Peninsula Borough	19020702	Shelikof Strait	25
Lake and Peninsula Borough	19020702	Shelikof Strait	25
Kenai Peninsula Borough	19030206	Lake Iliamna	26
Lake and Peninsula Borough	19030206	Lake Iliamna	26
Kenai Peninsula Borough	19030205	Lake Clark	27
Lake and Peninsula Borough	19030205	Lake Clark	27
Northwest Arctic Borough	19050201	Shishmaref	29
Shishmaref, City of	19050201	Shishmaref	29
Homer, City of	19020800	Cook Inlet	30
Kenai Peninsula Borough	19020800	Cook Inlet	30
Kenai, City of	19020800	Cook Inlet	30
Matanuska-Susitna, Borough of	19020800	Cook Inlet	30
Municipality of Anchorage	19020800	Cook Inlet	30
Fairbanks North Star Borough	19040509	Tolovana River	32
Aniak, City of	19030501	Aniak	34
Kenai Peninsula Borough	19020602	Tuxdeni-Kamishak Bays	35
Lake and Peninsula Borough	19020602	Tuxdeni-Kamishak Bays	35
City & Borough of Juneau	19010201	Mainland	36
Wrangell City & Borough	19010201	Mainland	36
Wrangell City & Borough	19010201	Mainland	36
Northwest Arctic Borough	19050103	Norton Bay	38
City & Borough of Juneau	19010304	Taku River	40
Matanuska-Susitna, Borough of	19040508	Nenana River	40
Nenana, City of	19040508	Nenana River	40
Kotzebue, City of	19050403	Lower Noatak River	42
Northwest Arctic Borough	19050403	Lower Noatak River	42
Matanuska-Susitna, Borough of	19020501	Upper Susitna River	43
Northwest Arctic Borough	19050105	Imuruk Basin	43
Lake and Peninsula Borough	19030101	Cold Bay	45
Northwest Arctic Borough	19050301	Selawik Lake	45
Fort Yukon, City of	19040403	Yukon Flats	47
Kenai Peninsula Borough	19020504	Yentna River	47
Matanuska-Susitna, Borough of	19020504	Yentna River	47
Galena, City of	19040705	Galena	50
Koyukuk, City of	19040705	Galena	50
Togiak, City of	19030305	Togiak	50

\* Communities high-lighted in yellow have already been selected for Risk MAP Studies. Communities high-lighted in peach/tan are suspended communities which don't participate in the NFIP.



**Figure 36: Kramer Avenue Landslide, Sitka, Alaska, August 2015**



*Photo: Joel Curtis, National Weather Service*



## CHAPTER NINE: ALASKA RISK MAP GOALS FOR THE COMING YEAR

Each year, goals are identified to ensure Alaska's Risk MAP Program fulfills its mission to deliver quality hazard data to Alaska's local governments in order to increase public awareness and lead to action that reduces risk to life and property. As the State Risk MAP coordinating agency, DCRA will accomplish the work program from October 1, 2017 through September 30, 2018 by implementing tasks to achieve the following goals:

- **Flood Hazard Data** - Address gaps in flood hazard data to form a solid foundation for risk assessment, floodplain management, and actuarial soundness of the NFIP.
- **Public Awareness/Outreach** - Ensure that a measurable increase of the public's awareness and understanding of risk results in a measurable reduction of current and future vulnerability.
- **Hazard Mitigation Planning** - Lead and support States, local, and Tribal communities to effectively engage in risk-based mitigation planning resulting in sustainable actions that reduce or eliminate risks to life and property from natural hazards.
- **Enhanced Digital Platform** - Provide an enhanced digital platform that improves management of Risk MAP, steward of information produced by Risk MAP, and improves communication and sharing of risk data and related products to all levels of government and the public.
- **Alignment and Synergies** - Align Risk Analysis programs and develop synergies to enhance decision-making capabilities through effective risk communication and management.

These goals will guide DCRA's implementation of the Alaska Risk MAP Program over the next year, outlined as follows:

### PROGRAM MANAGEMENT + COMMUNITY OUTREACH AND MITIGATION STRATEGIES STATEMENT OF WORK

#### *Task 1: State Mapping Business Plan and Risk MAP Strategy*

State and Local Business Plans and/or updates must be submitted in order for a partner to receive funding for Program Management in FY17. Plans must document the capabilities and accomplishments of the partner; explain the CTP's vision for implementing or participating in Risk MAP, such as describing how the partner's activities advance the vision, goals, and objectives of Risk MAP (including encouraging communities to take action to mitigate risk); include updates from previous years' activities (if applicable); and identify flood hazard mapping needs and give recommendations to FEMA regarding future Risk MAP Projects within the state or local jurisdiction.

#### *Task 2: Global Program Management*

**Scope:** Program Management is the active process of managing multiple related projects that need to





meet or exceed predefined performance metrics. Specific metrics are defined on a region-by-region basis, and it is recommended to include and/or reference specific relevant metrics as appropriate in this document. Efforts across a program should be aligned and integrated toward the accomplishment of Risk MAP goals.

Program Management activities will typically occur in the areas of integration, scope, schedule, cost, quality, human resources (staffing, training, resource enablement), communication, risk and/or procurement. Some efforts may extend beyond the scope of work defined in the SOW or specific project Mapping Activity Statement (MAS).

The CTP will work with the FEMA Regional Office during the initiation of this activity to determine a Program Management Plan for implementation.

In addition to the Risk Map Coordinator's (CTP) Business Plan, a Statewide Risk MAP Strategy will be submitted that reflects the support by other State, Local, and Federal stakeholders where other (non-Risk MAP) programs align (i.e. Hazard Mitigation Planning, Comprehensive Land Use Planning, State Emergency Management, State Dam Safety, etc.) in mission and/or goal. This Strategy will specifically describe how the stakeholders' activities advance the vision, goals, and objectives of Risk MAP to encourage communities to take action to mitigate risk; and provide recommendations to FEMA RX regarding action identified and advanced. This State Risk MAP Strategy will be submitted with the Grant Award Application and will include appendices for all projects entering the discovery process and entering the resilience phase during the FY16 Fiscal year.

**Table 29: Anticipated Risk MAP Meetings October 1, 2017 - September 30, 2018**

Watershed/Community	Discovery	FRR	CCO	Public	Resilience
Aniak, Bethel, Emmonak, Kwethluk					
Juneau			X	X	X
Ketchikan				X	X
Matanuska-Susitna					X
Sitka					X
Valdez					X

The State Risk MAP Strategy will guide the Risk MAP project prioritization that is reflected in the CTP Business Plan.



### **Anticipated Conferences and Meeting Venues Oct. 1, 2017 – Sep. 30, 2018:**

- FEMA Region X Mitigation Summit (Spring 2018)
- Association of State Floodplain Managers Annual National Conference (Spring/Summer 2018)
- Northwest Regional Floodplain Management Association Annual Conference (Fall 2018)
- American Planning Association National Planning Conference (Spring 2018)
- Alaska Chapter of the American Planning Association Alaska Planning Conference (November 2017)
- Alaska Forum on the Environment (February 2018)
- Other relevant venues as they become available

**Standards:** All Global Program Management Activities work shall be performed in accordance with the standards specified in Section 4 – Standards.

**Deliverable:** The CTP shall deliver the following to the FEMA Regional Project Officer with the application for this award:

- State of Alaska Risk MAP Strategy with Appendices for projects:
  - o Beginning the Discovery Phase during the FY16 Fiscal Year
  - o Entering the Resilience Phase during the FY16 Fiscal Year

To ensure successful Risk MAP program management, the State Risk MAP Coordinator must meet or exceed predefined performance metrics. Specific metrics are have been defined by FEMA Region X for State Risk MAP Coordinators.

### ***Task 3: Strategic Planning for Community Engagement***

**Scope:** The CTP will strategically prepare for engagement with communities within a watershed throughout a project's life cycle. Goals of this engagement are to help create understanding and ownership of flood risk and other natural hazards at state and local levels and to strengthen and encourage communities to take responsibility for progressing risk reduction actions that will result in a more resilient community.

Community action cannot be purchased; however, action can be influenced through flood risk and other natural hazards awareness and outreach activities, and advanced by proper project, supporting technical data development and communications planning throughout the Risk MAP process. Strategic communications planning can be assisted by a variety of tools and activities. The following potential activities included in this task are listed below:

***Integration Planning*** – Activities include conducting regular, cross-Mitigation meeting(s) for the watershed and/or project area (with emphasis on priority communities) to refresh community profile(s), and develop plans for advancing relationships and mitigation action.

***Awareness and Action Strategy*** – Support the development of the Regional approach for helping





communities to increase flood risk awareness and identify and advance mitigation strategies, including through outreach activities. Supporting activities to identify and advance actions may include: evaluation of strategies in local plans and initiatives; primary and secondary research; stakeholder engagement, including efforts to increase awareness; and facilitated planning processes.

***Community Prioritization*** – Activities include prioritizing communities within a watershed based on action potential or action readiness and contribution to the action target to define the level of personalized engagements communities receive.

***Watershed & Community Assessment*** – Activities include assessing a watershed and high priority communities to understand what is important to them, their mitigation priorities, and their existing relationships with FEMA and other Federal agencies, if applicable. This may include holding telephone discussions with local officials and residents to understand the watershed and identify all key stakeholders. The assessment will include local planners, floodplain administrators (FPA), elected officials, community leaders, local levee/dam/coastal leadership/business owners and others, based on local needs.

***Relationship Management and Action Plan*** – Activities include evaluating, updating, and executing on the relationship plan and mitigation action plan(s) as well as establishing or strengthening relationships between FEMA and local stakeholders.

***Communication and Outreach Strategy*** – Support the development and implementation of a Communication and Outreach Strategy outreach activities that increase flood and other natural hazard risk awareness for including various ad-hoc or regionally defined engagement. Examples could include expanded kick-off meetings, stakeholder coordination, engagement or communications planning, development and dissemination and specialized training.

Additionally, outreach activities for mapping will be performed and can best be understood as a process that enhances the understanding of the overall NFIP flood mapping program and the flood risk. This task does not include the outreach activities for a specific mapping project, but overall program outreach.

***Note: Communication and outreach activities described in this task are meant to be supplemental or complementary efforts to those identified in the Flood Risk Project MAS. CTPs and the Region are responsible for confirming no duplication of effort in other awards (grants, cooperative agreements, interagency agreements and contracts).***

The overarching goal for outreach is to create a climate of understanding and ownership of the mapping process, flood risk awareness, and mitigation action at the state, local and tribal levels. Well-planned



outreach activities can reduce political stress, confrontation in the media, and public controversy, which can arise from lack of information, misinformation, or misunderstanding. These outreach activities also can assist FEMA and other members of the Project Management Team (PMT) in responding to congressional inquiries. The CTP plans to continue Outreach activities to fulfill its strategy to educate communities on the necessary standards and benefits of developing better flood risk information.

The CTP will market and deliver resources and services that may be available to communities to increase risk awareness and promote acceptance and implementation of mitigation actions. This does not include the outreach activities for a specific mapping project that begins during Discovery and continues through the map production and post preliminary phases (when funded).

The following potential activities included in this task are listed below:

***Product Development & Dissemination*** - Develop and disseminate messages and products to support the Communication and Outreach Strategy that increase flood and other natural hazard risk awareness (developed under the Strategic Planning Task), including social media platforms, websites, fact sheets, newsletters, and press releases. CTP will coordinate with their FEMA POC to ensure up to date products and templates are used and new products are coordinated and fully reviewed prior to dissemination. The CTP will:

- Post completed Discovery Reports to the State Risk MAP website
- Post a Letter of Intent template for prospective Risk MAP communities to the State Risk MAP website.
- Post completed project scopes to the State Risk MAP website
- Post completed Risk Reports and links to the database(s) on the State Risk MAP website
- Work with Region X and CERC to develop press releases and other outreach materials for Discovery, Public, and Resilience Meetings.

***Outreach Campaign Implementation*** – Support implementation of outreach campaigns in communities as identified in the Communications and Outreach Strategy, i.e., the High Water Mark Campaign and Flood Safe.

***Other*** - Other activities as negotiated with the Region.

**Standards:** All work shall be performed in accordance with the standards specified in Section 4 – Standards.

**Deliverables:** The CTP shall deliver the following to the FEMA Regional Project Officer:

- Integrated and strategic plan for advancing relationships



- Activities that increase flood risk awareness and subsequent or related mitigation actions
- New or updated community profiles
- Report prioritizing communities within a watershed based on action potential or action readiness and contribution to the action target and detailing outreach and coordination activities
- Watershed and Community Assessment
- Communication and Outreach Strategy
- Update to CTP's website as needed
- Newly developed messages, products and templates
- Report on Outreach Activities and Awareness Indicators, if applicable

### *Task 4: Global Outreach for Mapping*

**Scope:** The outreach project or activities for a combined PM - COMS SOW can best be understood as a process that enhances the understanding of the overall National Flood Insurance Program (NFIP) flood mapping program including flood risks and hazard identification. This task does not include the outreach activities for a specific mapping project that begins during the project Discovery phase and continues through the map production and post- preliminary phases.

The overarching goal for outreach is to create a climate of understanding and ownership of the mapping process at the state, tribal and local levels. Well-planned outreach activities can reduce political stress, confrontation in the media, and public controversy, which can arise from lack of information, misunderstanding, or misinformation. These outreach activities also can assist FEMA and other members of the Project Management Team (PMT) in responding to congressional inquiries. The CTP plans to continue outreach activities to fulfill its strategy to educate communities on the necessary standards and benefits of developing better flood risk information.

The CTP will work with the Regional Office during the initiation of this activity to determine or understand the Outreach Plan. The Regional Office will have access to many outreach tools that have been developed for this process that can be utilized or customized. All communication with local governments will be done in accordance with 44 CFR Part 66.

The Mapping Partner shall notify FEMA and all applicable parties of all meetings with community officials at least two weeks prior to the meeting (with as much notice as possible). FEMA and/or its contractor may or may not attend the community meetings.

**Standards:** All Outreach activities shall be performed in accordance with the standards specified in Section 4 – Standards.

**Deliverables:** The CTP shall deliver the following to the FEMA Regional Project Officer:



- Outreach Plan
- Report detailing outreach and coordination activities, including backup or supplemental information used in writing the report
- Business plan update describing (in detail) the outreach activities
- Updates to CTP's website.

### *Task 5: Training to State, Tribal and Local Officials and Community Capability Development*

**Scope:** The CTP will support community efforts to raise awareness of risk; mitigation planning; risk assessment; as well as assessing, prioritizing, developing and implementing mitigation strategies. Activities may include: planning, developing and delivering the training or direct support for community capability development.

The CTP must ensure, and must provide documentation when requested by FEMA, that activities funded through this SOW do not replace activities funded under other Federal grant programs, such as Hazard Mitigation Planning or Floodplain Management grant programs. The following potential activities included in this task are listed below:

*Risk MAP data availability and tools* – Support building community capability to use and understand the regulatory and flood risk components and tools of a Risk MAP project. The CTP will support this task for communities/watersheds receiving new maps and Resilience products including:

- Juneau
- Ketchikan
- Mat-Su
- Sitka
- Valdez

*Community Capability Development* – Support building community capability to sponsor and implement mitigation actions through activities such as: capability assessment, gap analysis, as well as process, change and project management. The CTP will support this task for communities/watersheds receiving new maps and Resilience products including:

- Juneau
- Ketchikan
- Mat-Su
- Sitka
- Valdez



**Building Science** – Support local, state, and tribal communities in the understanding of construction issues and opportunities in the identified natural hazard and risk areas. The CTP will support this task for communities in the post-resilience process and during map roll out in coordination with the State Floodplain Manager and State Earthquake Program Manager for the following communities:

- Juneau
- Ketchikan
- Mat-Su
- Sitka
- Valdez

**Community Planning** – Support local, state, and tribal communities in the consideration of natural hazards in all relevant areas of community planning, i.e., comprehensive plans, capital improvement plans, etc. The CTP will support this task for communities/watersheds receiving new maps and Resilience products including:

- Juneau
- Ketchikan
- Mat-Su
- Sitka
- Valdez

**Mitigation Planning Technical Assistance**- Support local, state, and tribal communities by the creation and dissemination of training and technical assistance for achieving mitigation actions. This task cannot fund an activity that is already funded through another Federal grant (including the Program Management SOW) and should not duplicate assistance available to any community engaged in a Risk MAP project or a Hazard Mitigation Assistance (HMA) planning or project grant. Training can be provided at any time during the Risk MAP project, and it may be desired to include a series of training activities over the course of a flood risk project.

**Other** – Other activities as negotiated with the Region.

Training can be provided at any time during a Risk MAP project, and it may be desired to include a series of training activities over the course of a flood risk project. The CTP will coordinate and/or administer training for communities and/or individual groups as needed. The CTP will:

- Determine target audience (name of community and/or individual groups, such as CEOs, engineers, GIS employees, etc.).
- Advertise to, and confirm, training participants.
- Determine training facility.
- Conduct training evaluations.





- Follow-up with participants on unresolved issues.

**Standards:** All activities shall be performed in accordance with the standards specified in Section 4 – Standards. CTPs must coordinate with the Regional Project Officer to ensure that any training developed or delivered also complies with Regional standards.

**Deliverables:** The CTP shall deliver the following to the FEMA Regional Project Officer:

- Copies of draft and final training materials
- A list of training instructors
- A list of all participants and completed course evaluations (such as pre- and post-knowledge surveys) after each training course
- Report on Outreach Activities and Awareness Indicators, if applicable

### *Task 6: Meetings and Process Facilitation*

**Scope:** The CTP will hold meetings and facilitate the decision-making processes. The objectives of this task include coordination and follow through for increasing risk awareness, increased regulatory product adoption and acceptance, and mitigation-related activities throughout the Flood Risk Project lifecycle. Meeting activities include planning, presenting, facilitating discussions and completing any associated follow-up. Meeting activities are only allowable if not funded under an award for a specific project area outlined in a Flood Risk Project MAS, or the CTP must provide additional scope to clarify the difference between the funding under the COMS SOW and the MAS for the specific flood risk project. The following potential activities included in this task are listed below:

**Table 30: Anticipated Risk MAP Meetings October 1, 2017 - September 30, 2018**

Watershed/Community	Discovery	FRR	CCO	Public	Resilience
Aniak, Bethel, Emmonak, Kwethluk					
Juneau			X	X	X
Ketchikan				X	X
Matanuska-Susitna					X
Sitka					X
Valdez					X

**Process Facilitation** – Activities include support for implementation of the strategic planning efforts, which could include: identifying and supporting key community priorities and key influencers; support



community identification of mitigation opportunities; gap analysis of community requirements for mitigation implementation; ongoing relationship management; monitoring, evaluation and update.

***Community Consultation Officer's (CCO) Meeting*** – Activities may include planning, presenting and facilitating discussions with community officials for awareness and acceptance of regulatory products, as well as reporting on Outreach Activities and Awareness Indicators, if applicable. The purpose of the meeting will be to review data inputs to a flood study, preview changes to preliminary FIRM data and maps, discuss newly identified flood risk and community actions to reduce risk, and provide information about the appeals period, map adoption, and insurance impacts. The CTP will support CCO and Public meetings for the following watersheds/communities:

- Juneau

***Flood Engineering Review Meeting*** – Activities may include planning, presenting, and facilitating discussions of data inputs and engineering models used for flood studies with community officials. In addition, draft work maps showing initial study results will be presented during the meeting. The meeting may also include review of mitigation actions and any non-regulatory products if developed during the project, as well as reporting on Outreach Activities and Awareness Indicators, if applicable.

***Resilience Meeting*** – Activities may include the planning, presenting and facilitation of community discussions related to mitigation plan status, community risks and hazards, local mitigation action opportunities and mitigation best practices, as well as reporting on Outreach Activities and Awareness Indicators, if applicable. The CTP will support Resilience Meetings and post-resilience coordination for the following watersheds/communities:

- Juneau
- Ketchikan
- Mat-Su
- Sitka
- Valdez

The Mapping Partner shall notify FEMA and all applicable parties of all meetings with community officials at least two weeks prior to the meeting (with as much notice as possible). FEMA and/or its contractor(s) may or may not attend the community meetings.

**Standards:** All work shall be performed in accordance with the standards specified in Section 4 – Standards.



**Deliverables:** The CTP shall deliver the following to the FEMA Regional Project Officer:  
Actions discussed/identified (this should be submitted in the quarterly grant narrative)

### *Task 7: Mitigation Planning Technical Assistance and Support*

**Scope:** Develop and disseminate products and materials to support local, state, and tribal jurisdictions to develop, evaluate, update and implement their mitigation plans and strategies. Technical Assistance provided through Risk MAP should focus on building a community's capability to plan for and reduce risk. Technical Assistance should encourage hazard mitigation plan implementation and advance community hazard mitigation actions through the Mitigation Planning Process in the form of administration, technical assistance for specific planning requirements, as well as resources and tools for improved planning. The following steps are emphasized:

- Incorporating new flood hazard and risk information
- Updating and refining mitigation strategies, especially as related to new flood hazard/risk information
- Training mitigation planning teams
- Incorporating mitigation concepts into existing community plans, programs, and policies.

This task may not be used to fund the creation or update of a Hazard Mitigation Plan. This task cannot fund an activity that is already funded through another Federal grant (including the Program Management SOW) and should not duplicate assistance available to any community engaged in a Risk MAP project or a Hazard Mitigation Assistance (HMA) planning or project grant, including planning-related activities HMA grants.

The CTP will leverage Risk MAP data, decision support analyses, products and/or processes to support communities to increase flood risk awareness and advance mitigation actions. The following potential activities included in this task are listed below:

**Action Identified** – Support for communities to identify mitigation opportunities and/or select amongst alternatives through the provision of data and/or analysis. Data is considered new data or aggregation of existing data delivered and disseminated in formats readily consumed by the end user. Analysis (i.e., risk assessments; social vulnerability analysis; triple bottom line analysis; and feasibility assessments) may be performed to help identify solutions to identified problems and/or develop requirements for project solutions. The CTP will support action identified by updating the FEMA Action Tracker for the following watersheds/communities:

- Aniak
- Bethel



- Emmonak
- Juneau
- Ketchikan
- Kwethluk
- Mat-Su
- Sitka
- Valdez

**Action Advanced** – Support for communities to advance mitigation opportunities including scoping/design; budgeting; obtaining funding; project planning; technical support for zoning, code, and/or ordinance development; and outreach strategies for project support. *Funds cannot be used to update all or part of a Hazard Mitigation Plan but may be used to integrate hazard mitigation concepts into community plans and regulations.* The CTP will support action advanced by facilitating conversations with state and local stakeholders and updating the FEMA Action Tracker for the following watersheds/communities:

- Anchorage
- Kenai
- Juneau
- Ketchikan
- Mat-Su
- Sitka
- Valdez

**Evaluation and Valuation** – Support provided to the community to evaluate and demonstrate the value of the mitigation investment, including the calculation of economic, environmental and/or social benefits or the losses avoided from natural hazard events.

**Other** - Other activities as negotiated with the Region.

The CTP shall work in close coordination with state and local Emergency Management offices throughout the life cycle of a Risk MAP project to collect and quantify Actions Identified and Actions Advanced as part of a project specific MAS. Additionally, Actions should be collected throughout the period of performance of this grant for any projects even after the close out of a Risk MAP project. This activity is used to provide for the coordinated effort with Emergency Management for communicating with communities outside of the life cycle of the Risk MAP project extending beyond completion of the project, for all watersheds that fall within the Period of Performance of this SOW.



**Standards:** All Technical Assistance activities shall be performed in accordance with the standards specified in Section 4 – Standards. Coordinate with Regional Project Officer to ensure that technical assistance also complies with Regional standards. Additional information may be available in FEMA’s guidance document *Risk MAP Guidance for Incorporating Mitigation Planning Technical Assistance and Training into Flood Risk Projects*.

**Deliverables:** The CTP shall deliver the following to the FEMA Regional Project Officer:

- Action Identification and Advancement Strategy
- Quarterly projections indicating the potential collection of Actions Identified and Advanced
- Updates to Mitigation Action Tracker with new Actions Advanced through this coordination.
- Report on Outreach Activities and Awareness Indicators, if applicable
- Copies of all technical data provided to local, state, and tribal communities
- A report detailing the technical assistance provided, including date(s) of technical assistance, type of assistance and local, state, or tribal community stakeholders supported

### **Task 8: Minimal Map Printing**

**Scope:** Print copies of maps for individuals within the CTP’s jurisdiction. Funding for this activity must not be covered under another FEMA grant program and may not exceed \$5,000.

**Standards:** All Minimal Map Printing activities work shall be performed in accordance with the standards specified in Section 4 - Standards.

**Deliverables:** The CTP shall deliver the following to the FEMA Regional Project Officer:

- Quarterly report detailing the map printing activities, including recipient community/individual, panel number, number of copies and total associated cost.

### **Task 9: Coordinated Needs Management Strategy (CNMS)**

**Scope:** CNMS is a spatial database that each FEMA Region Service Center (RSC) maintains as representation of FEMA’s mapped floodplain inventory and a reporting system for New Valid Updated Engineering (NVUE). CNMS is maintained and updated for LOMRs, Discovery, DFIRM mapping projects, and for expiring CNMS validation miles. The CTP will need to coordinate with the RX RSC, FEMA, and CERC to make sure the database is updated in accordance to FEMA specifications after a Discovery Meeting has been held.





For this MAS, the State of Alaska Department of Commerce, Community and Economic Development, Division of Community and Regional Affairs will review data before it is entered into the CNMS database. Data will be collected by CERC and the RSC during Discovery. This includes stream reaches identified for study /restudy and any areas with remaining needs and/or requests as appropriate. The mapping partner needs to resolve any discrepancies within CNMS found at Discovery working with the RSC before the final deliverable.

**Standards:** All work shall be performed in accordance with the standards specified in the CNMS User's Guide.

**Deliverables:** The mapping partner shall deliver the following to the FEMA Region Service Center (RSC) in accordance with the schedule outlined in Section 5 – Schedule.

- 1 Post-Discovery phone call with the RSC, CERC, and FEMA to ensure mapping needs were captured correctly and entered into CNMS.



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